FIG. 1

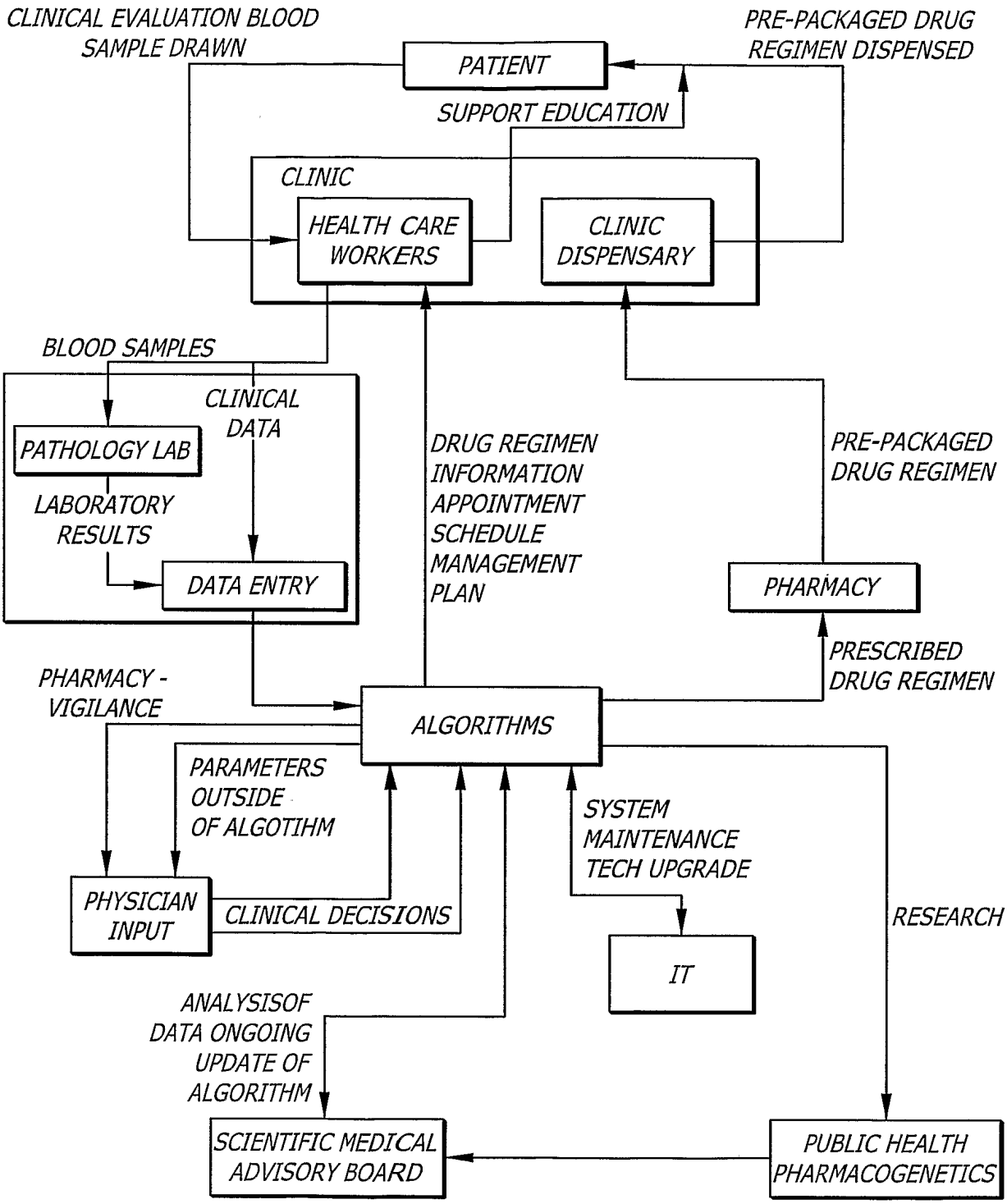

CLINICAL EVALUATION BLOOD SAMPLE DRAWN
PRE-PACKAGED DRUG REGIMEN DISPENSED
PATIENT
SUPPORT EDUCATION
CLINIC
HEALTH CARE WORKERS
CLINIC DISPENSARY
BLOOD SAMPLES
CLINICAL DATA
PATHOLOGY LAB
LABORATORY RESULTS
DATA ENTRY
DRUG REGIMEN INFORMATION APPOINTMENT SCHEDULE MANAGEMENT PLAN
PRE-PACKAGED DRUG REGIMEN
PHARMACY
PRESCRIBED DRUG REGIMEN
PHARMACY - VIGILANCE
ALGORITHMS
PARAMETERS OUTSIDE OF ALGOTIHM
SYSTEM MAINTENANCE TECH UPGRADE
PHYSICIAN INPUT
CLINICAL DECISIONS
IT
RESEARCH
ANALYSISOF DATA ONGOING UPDATE OF ALGORITHM
SCIENTIFIC MEDICAL ADVISORY BOARD
PUBLIC HEALTH PHARMACOGENETICS

FIG. 2.1

Form Number

Date Prepared Y Y Y Y M M D D

***ASSESSMENT* ART FORM**

Date of birth	Y Y Y Y M M D D			
Height	cm			
Weight	kg on Y Y Y Y M M D D			
Now on antiretroviral medicine for HIV/AIDS?	No			
	Yes	USE FOLLOW-UP FORM		
Documented positive HIV tests	0	1	2	
Location: _____	Date Y Y Y Y M M D D			
Location: _____	Date Y Y Y Y M M D D			
Previous ART exposure				
PEP	Yes	No	Unknown	
PMTCT	Yes	No	Unknown	
ART interupted	Yes	No	Unknown	
Treatment Readiness				
Do you want to be on medicine for AIDS?	Yes	No		
Drug literacy training complete	Yes	No		
Adherence training complete	Yes	No		
Social worker consultation complete	Yes	No		
Home visit complete	Yes	No		
Gender	Male	Female		
For Female:				
Are you pregnant?	Yes	No	Maybe	
Are you able to have children?	Yes	No	Unknown	
Do you want to have children at this time?	Yes	No		
Are you using reliable contraception?	Yes	No	Unknown	
WHO Stage				**Defining Condition**
WHO Clinical Stage 1	1			
WHO Clinical Stage 2	2			
WHO Clinical Stage 3	3			
WHO Clinical Stage 4	4			
Pneumocystis Pneumonia - current or previous	Yes	No	Unknown	
Thrush - persistent	Yes	No	Unknown	
Cotrimoxazole				
Allergic to cotrimoxazole?	Yes	No	Unknown	
Was cotrimoxazole dispensed?	Yes	No	Unknown	
Cotrimoxazole pill count - Is patient compliant?	Yes	No	Unknown	
Has patient kept 3 appointments in a row?	Yes	No	Unknown	
Pain and/or tingling in hands and/or feet?	Yes	No	Unknown	
Pain and tingling do not cause a problem walking	Mild			
Pain and tingling > 3 days - non-narcotic analgesia required	Moderate			
Walks with great difficulty - narcotic analgesia required	Severe			
Unable to walk - narcotic analgesia does not help	Incapacitating			
Psychological problems now or in the past	Yes	No	Unknown	
Depression - overwhelming sadness, not related to any event	Depression			
Thoughts or attempts of suicide	Suicide			
Previous mental illness requiring treatment/hospitalization	Mental Illness			

FIG. 2.2

Nevirapine

Have you ever taken Nevirapine?	Yes	No	Unknown
Nevirapine Skin Rash	Yes	No	Unknown
Redness, itching	Mild		
Diffuse rash, dry and peeling	Moderate		
Blisters, moist peeling, sores	Severe		
Severe redness, ulcers, skin sloughing off	Incapacitating		

Regimen Failure

Has the patient failed Regimen 1a	Yes	No	Unknown
Virologic failure	Yes	No	Unknown
Therapeutic failure (side effects)	Yes	No	Unknown
Has the patient failed Regimen 1b	Yes	No	Unknown
Virologic failure	Yes	No	Unknown
Therapeutic failure (side effects)	Yes	No	Unknown
Nevirapine Resistant - proven	Yes	No	Unknown

TB

Are you being treated for active TB **now**?	Yes	No	Unknown
Treatment for active TB in the past 2 years?	Yes	No	Unknown
Is your treatment for active TB complete?	Yes	No	Unknown
Date active TB treatment started	Y Y Y Y	M M	D D
Are you taking Isoniazid to prevent TB now?	Yes	No	Unknown
Date Isoniazid treatment started	Y Y Y Y	M M	D D
Cough > 2 weeks	Yes	No	
Fever > 2 weeks	Yes	No	
Night sweats	Yes	No	
Weight loss > 1.5 kg in past 4 weeks	Yes	No	
Sputum tested for TB in the last 3 months?	Yes	No	
Result of TB sputum test	Positive	Negative	

LABS

	Previous	Previous	Previous	Previous	Previous	Current	
Date							
Weight							kg
CD4							c/mL
Viral Load							c/mm^3
Liver – ALT							U/L
Hemoglobin							g/L
Neutrophils							/mm^3
Lipase							U/L
Creatinine							umol/L
MCV							fL
Platelets							10^9/L
Hepatitis A	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	
Hepatitis B	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	
Hepatitis C	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	
TB Skin Test	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	
TB Sputum	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	Positive Negative	

Form Filled in by_____ Title _____

FIG. 3.1

Form Number

Date Prepared Y Y Y Y M M D D

***FOLLOW-UP* ART FORM**

Date of birth Y Y Y Y M M D D

Height cm

Weight kg on Y Y Y Y M M D D

Documented positive HIV tests 0 1 2

Location: _____ Date Y Y Y Y M M D D

Location: _____ Date Y Y Y Y M M D D

Now on antiretroviral medicine for HIV/AIDS? No Yes Check drugs in regimen:

1A:	**EFV** Stocrin (Efivarenz)	**d4T** Zerit (Stavudine)	**3TC** (Lamivudine)	1B:	**NVP** Virumine (Nevirapine)	**d4T** Zerit (Stavudine)	**3TC** (Lamivudine)
2:	**ddI** Videx (Didanosine)	**AZT** Retrovir (Zidovudine)	**Lopinavir/** Ritanovir Kaletra	Other:			

Adherence <80% 80-90% 90-95% >95%

Regimen Failure

Has the patient failed Regimen 1a	Yes	No	Unknown
Virologic failure	Yes	No	Unknown
Therapeutic failure (side effects)	Yes	No	Unknown
Has the patient failed Regimen 1b	Yes	No	Unknown
Virologic failure	Yes	No	Unknown
Therapeutic failure (side effects)	Yes	No	Unknown
Nevirapine Resistant - proven	Yes	No	Unknown

Gender Male Female

For Female:

Are you pregnant?	Yes	No	Maybe
Are you able to have children?	Yes	No	Unknown
Do you want to have children at this time?	Yes	No	
Are you using reliable contraception?	Yes	No	Unknown

WHO Stage **Defining Condition**

WHO Clinical Stage 1	1	
WHO Clinical Stage 2	2	
WHO Clinical Stage 3	3	
WHO Clinical Stage 4	4	

Pneumocystis Pneumonia - current or previous	Yes	No	Unknown
Thrush - persistent	Yes	No	Unknown

Cotrimoxazole

Allergic to Cotrimoxazole?	Yes	No	Unknown
Was Cotrimoxazole dispensed?	Yes	No	
Cotrimoxazole pill count - Is patient compliant?	Yes	No	
Has patient kept 3 appointments in a row?	Yes	No	Unknown

Pain and/or tingling in hands and/or feet? Yes No Unknown

Pain and tingling do not cause a problem walking	Mild
Pain and tingling > 3 days - non-narcotic analgesia required	Moderate
Walks with great difficulty - narcotic analgesia required	Severe
Unable to walk - narcotic analgesia does not help	Incapacitating

FIG. 3.2

Psychological problems now or in the past	Yes	No	Unknown
Depression - overwhelming sadness, not related to any event	Depression		
Thoughts or attempts of suicide	Suicide		
Previous mental illness requiring treatment/hospitalization	Mental Illness		
Nevirapine			
Have you ever taken Nevirapine?	Yes	No	Unknown
Nevirapine Skin Rash	Yes	No	Unknown
Redness, itching	Mild		
Diffuse rash, dry and peeling	Moderate		
Blisters, moist peeling, sores	Severe		
Severe redness, ulcers, skin sloughing off	Incapacitating		
TB			
Are you being treated for active TB **now**?	Yes	No	Unknown
Treatment for active TB in the past 2 years?	Yes	No	Unknown
Is your treatment for active TB complete?	Yes	No	Unknown
Date active TB treatment started	Y Y Y Y	M M	D D
Are you taking Isoniazid to prevent TB now?	Yes	No	Unknown
Date Isoniazid treatment started	Y Y Y Y	M M	D D
Cough > 2 weeks	Yes	No	Any 1 "yes" get sputum for smear and culture
Fever > 2 weeks	Yes	No	
Night sweats	Yes	No	
Weight loss > 1.5 kg in past 4 weeks	Yes	No	
Sputum tested for TB in the last 3 months?	Yes	No	
Result of TB sputum test	Positive	Negative	

LABS

	Previous		Previous		Previous		Previous		Previous		Current		
Date													
Weight													kg
CD4													c/mL
Viral Load													c/mm^3
Liver – ALT													U/L
Hemoglobin													g/L
Neutrophils													/mm^3
Lipase													U/L
Creatinine													umol/L
MCV													fL
Platelets													10^{-9}/L
Hepatitis A	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	
Hepatitis B	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	
Hepatitis C	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	
TB Skin Test	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	
TB Sputum	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	

Form Filled in by_____ Title _____

FIG. 4.1

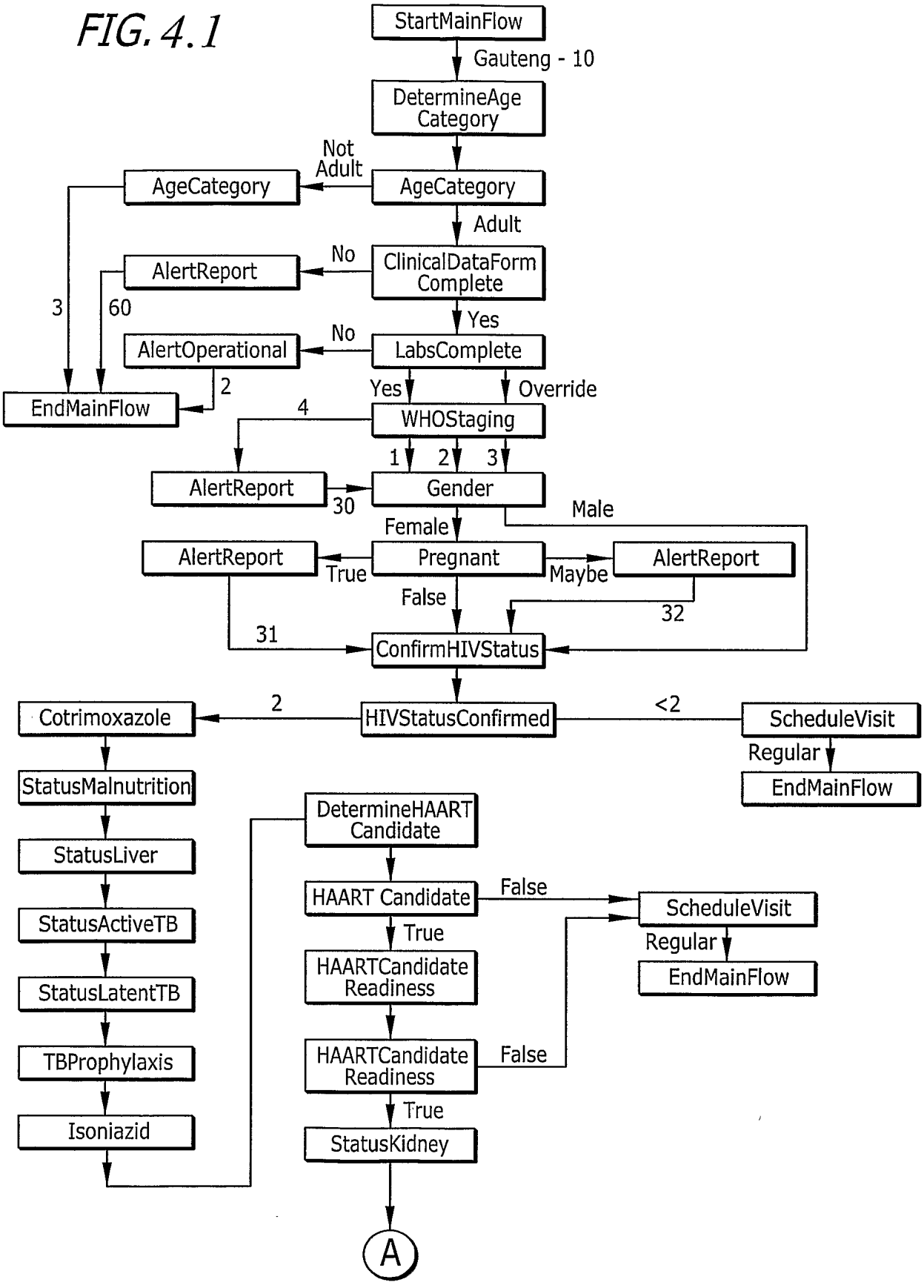
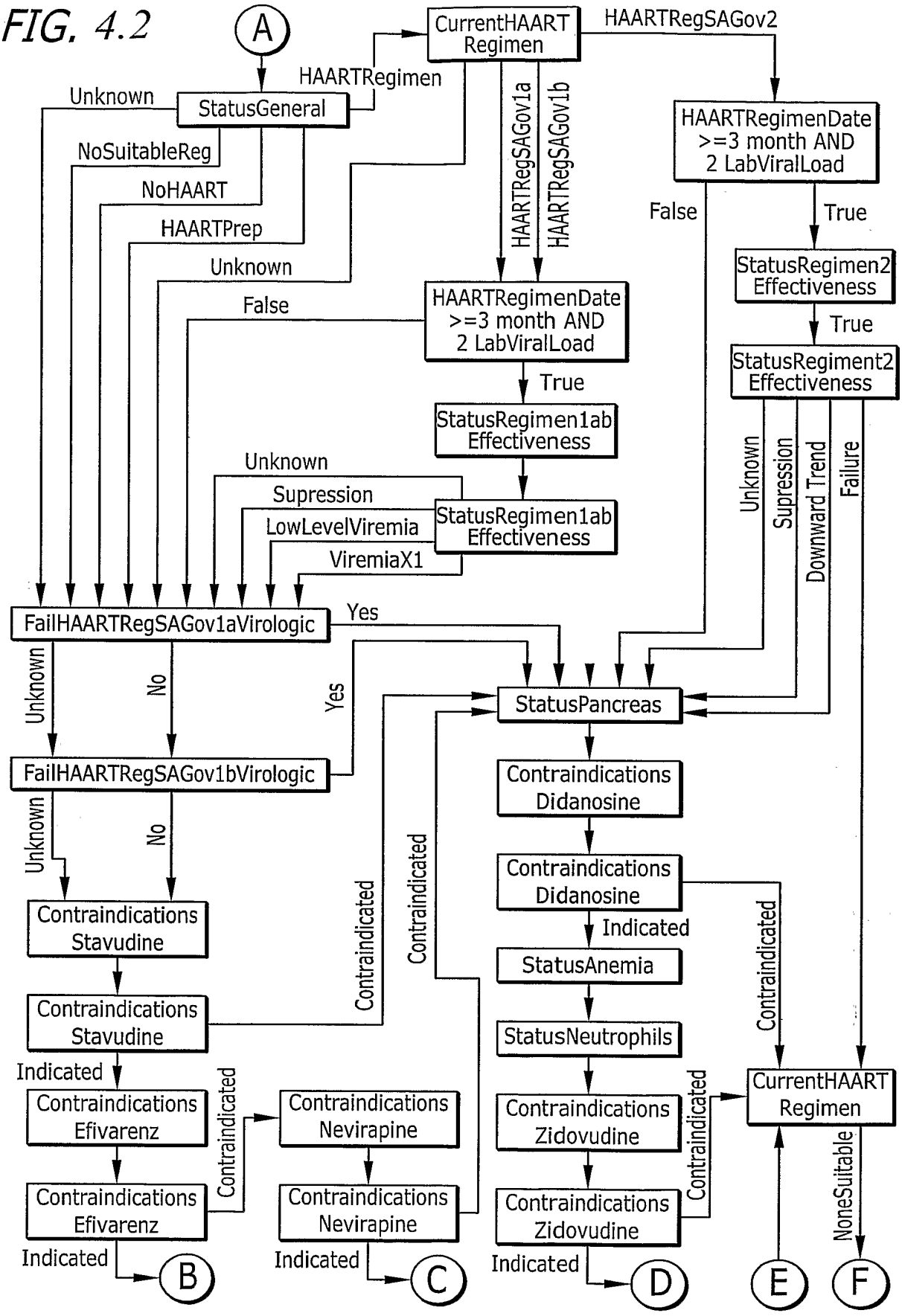

StartMainFlow
Gauteng - 10
DetermineAge Category
Not Adult
AgeCategory
AgeCategory
Adult
No
AlertReport
ClinicalDataForm Complete
3
60
Yes
No
AlertOperational
LabsComplete
2
Yes
Override
EndMainFlow
4
WHOStaging
1
2
3
AlertReport
30
Gender
Male
Female
AlertReport
True
Pregnant
Maybe
AlertReport
False
32
31
ConfirmHIVStatus
2
<2
Cotrimoxazole
HIVStatusConfirmed
ScheduleVisit
Regular
EndMainFlow
StatusMalnutrition
DetermineHAART Candidate
StatusLiver
HAART Candidate
False
ScheduleVisit
StatusActiveTB
True
Regular
HAARTCandidate Readiness
EndMainFlow
StatusLatentTB
HAARTCandidate Readiness
False
TBProphylaxis
True
Isoniazid
StatusKidney
A

FIG. 4.2


A
CurrentHAART Regimen
HAARTRegSAGov2
HAARTRegimen
Unknown
StatusGeneral
HAARTRegSAGov1a
HAARTRegSAGov1b
HAARTRegimenDate >=3 month AND 2 LabViralLoad
NoSuitableReg
NoHAART
HAARTPrep
Unknown
False
True
StatusRegimen2 Effectiveness
HAARTRegimenDate >=3 month AND 2 LabViralLoad
False
True
StatusRegimen1ab Effectiveness
StatusRegiment2 Effectiveness
Unknown
Supression
LowLevelViremia
ViremiaX1
StatusRegimen1ab Effectiveness
Unknown
Supression
Downward Trend
Failure
FailHAARTRegSAGov1aVirologic
Yes
Unknown
No
Yes
StatusPancreas
FailHAARTRegSAGov1bVirologic
Contraindications Didanosine
Unknown
No
Contraindications Didanosine
Contraindicated
Contraindicated
Indicated
Contraindications Stavudine
StatusAnemia
Contraindicated
Contraindications Stavudine
StatusNeutrophils
Indicated
Contraindications Efivarenz
Contraindicated
Contraindications Nevirapine
Contraindications Zidovudine
Contraindicated
CurrentHAART Regimen
Contraindications Efivarenz
Contraindications Nevirapine
Contraindications Zidovudine
NoneSuitable
Indicated
Indicated
Indicated
B
C
D
E
F

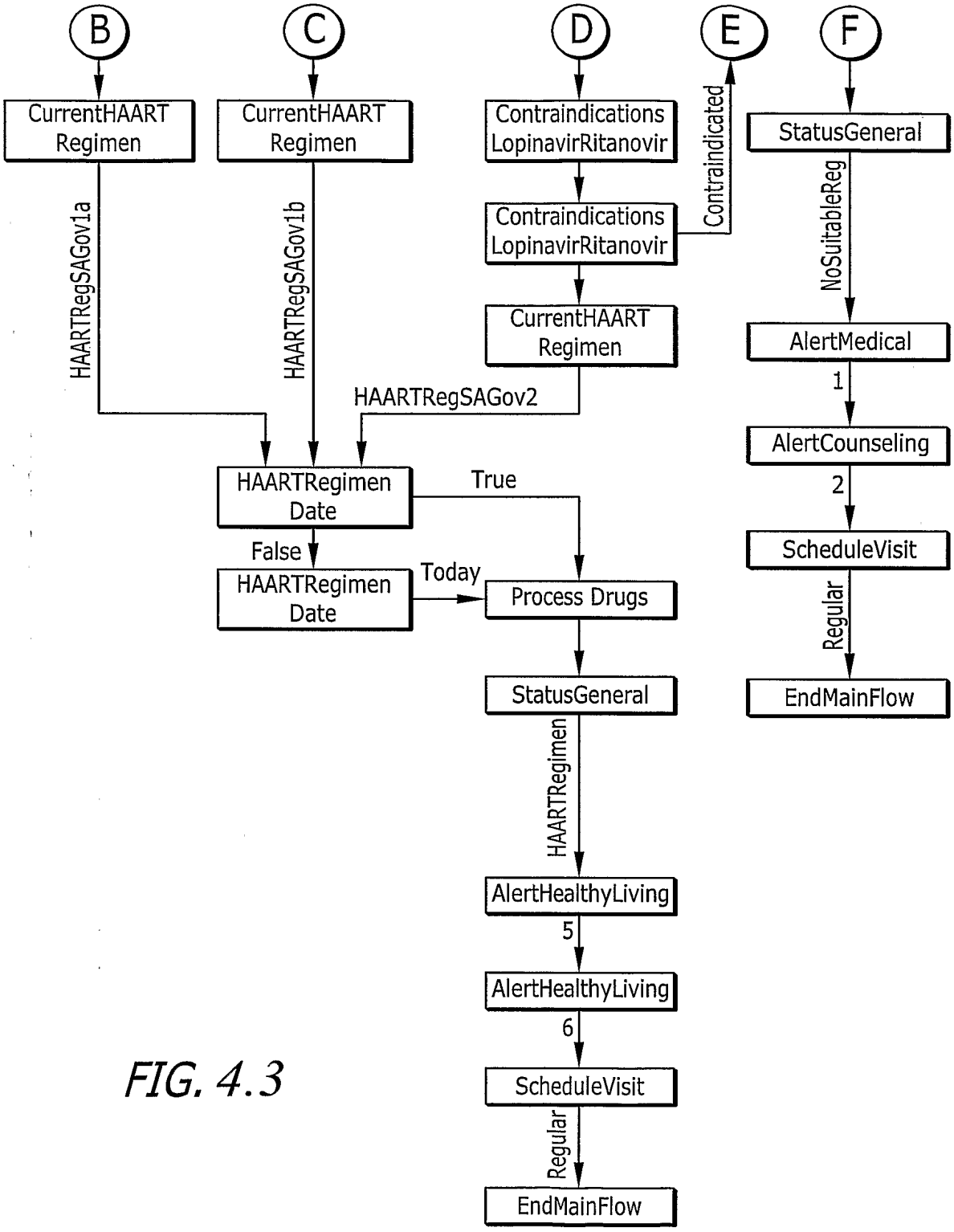

B
C
D
E
F
CurrentHAART Regimen
CurrentHAART Regimen
Contraindications LopinavirRitanovir
StatusGeneral
HAARTRegSAGov1a
HAARTRegSAGov1b
Contraindicated
Contraindications LopinavirRitanovir
NoSuitableReg
CurrentHAART Regimen
AlertMedical
HAARTRegSAGov2
1
AlertCounseling
HAARTRegimen Date
True
2
ScheduleVisit
False
Today
HAARTRegimen Date
Process Drugs
Regular
EndMainFlow
StatusGeneral
HAARTRegimen
AlertHealthyLiving
5
AlertHealthyLiving
6
ScheduleVisit
Regular
EndMainFlow

FIG. 4.3

FIG. 5

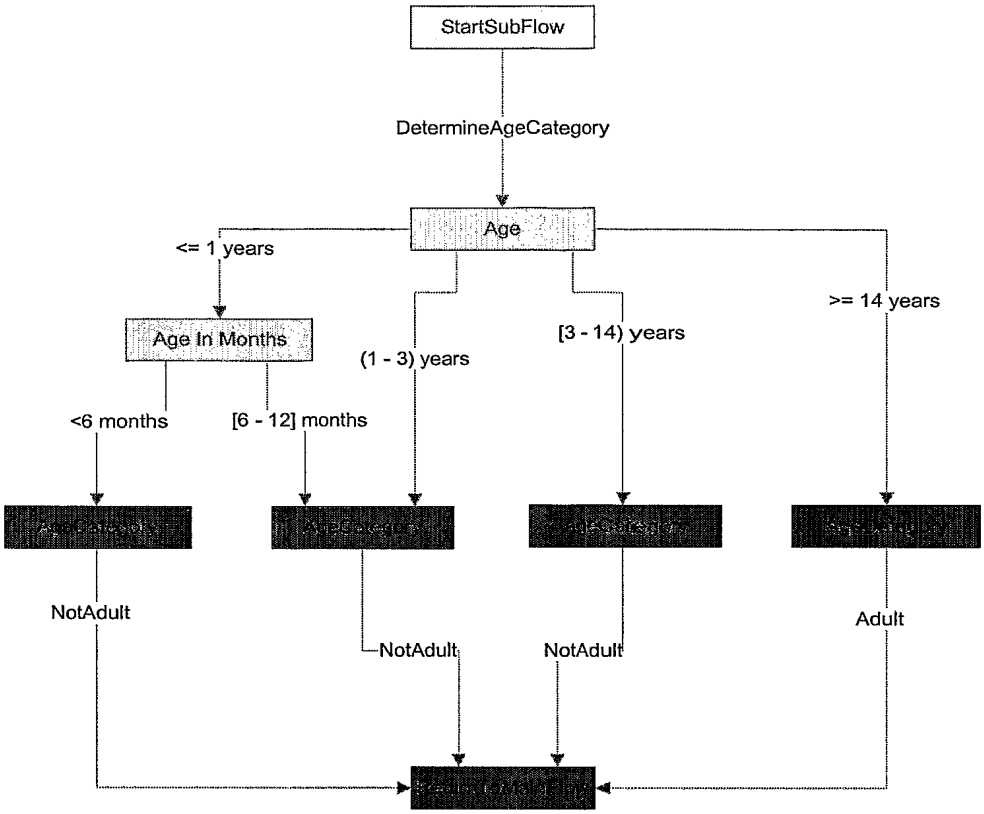

StartSubFlow
DetermineAgeCategory
Age
<= 1 years
Age In Months
<6 months
[6 - 12] months
(1 - 3) years
[3 - 14) years
>= 14 years
NotAdult
NotAdult
NotAdult
Adult

FIG. 6

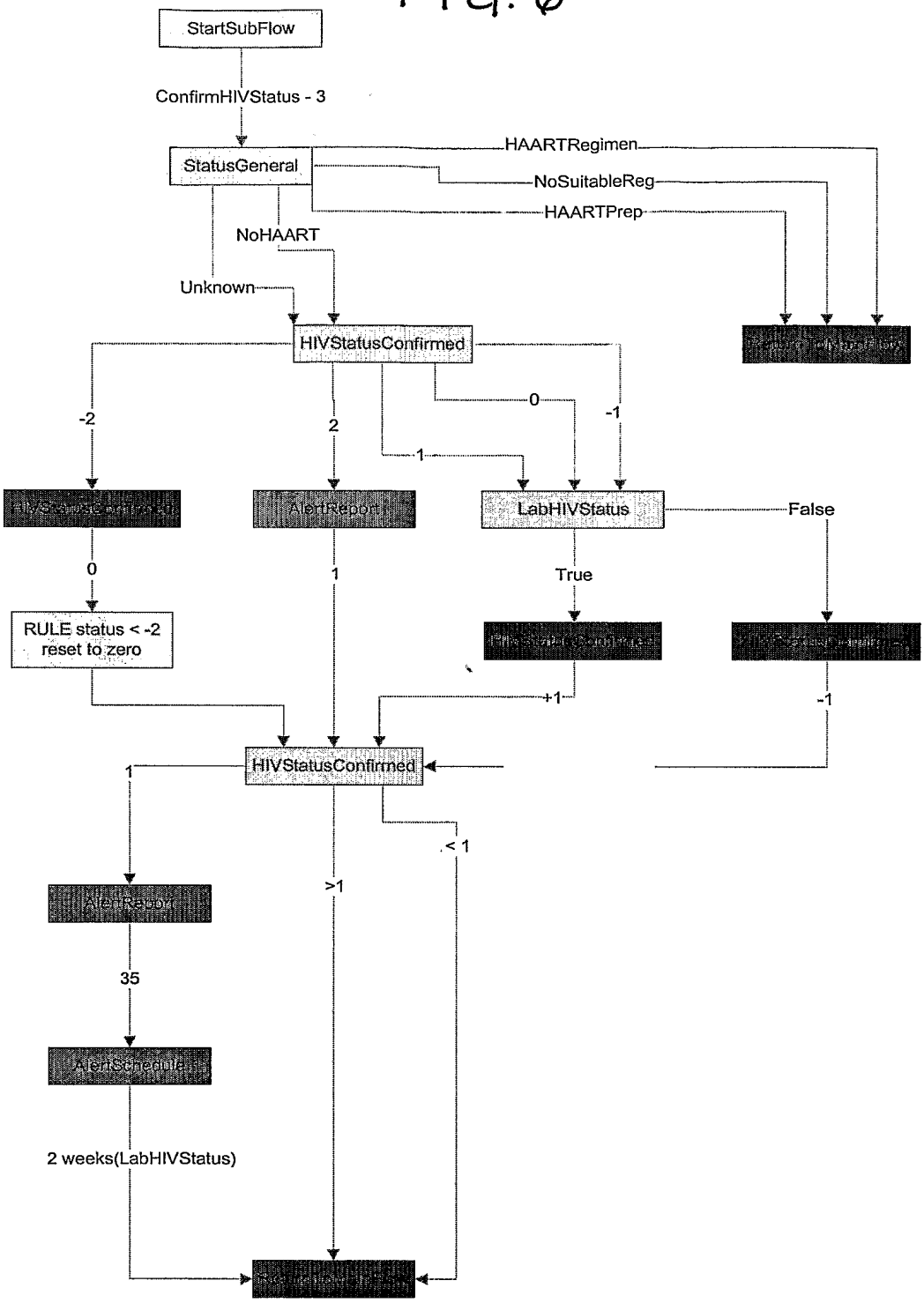

StartSubFlow
ConfirmHIVStatus - 3
StatusGeneral
HAARTRegimen
NoSuitableReg
HAARTPrep
NoHAART
Unknown
HIVStatusConfirmed
-2
2
1
0
-1
AlertReport
LabHIVStatus
False
0
1
True
RULE status < -2
reset to zero
+1
-1
HIVStatusConfirmed
1
< 1
>1
AlertReport
35
AlertSchedule
2 weeks(LabHIVStatus)

FIG. 7

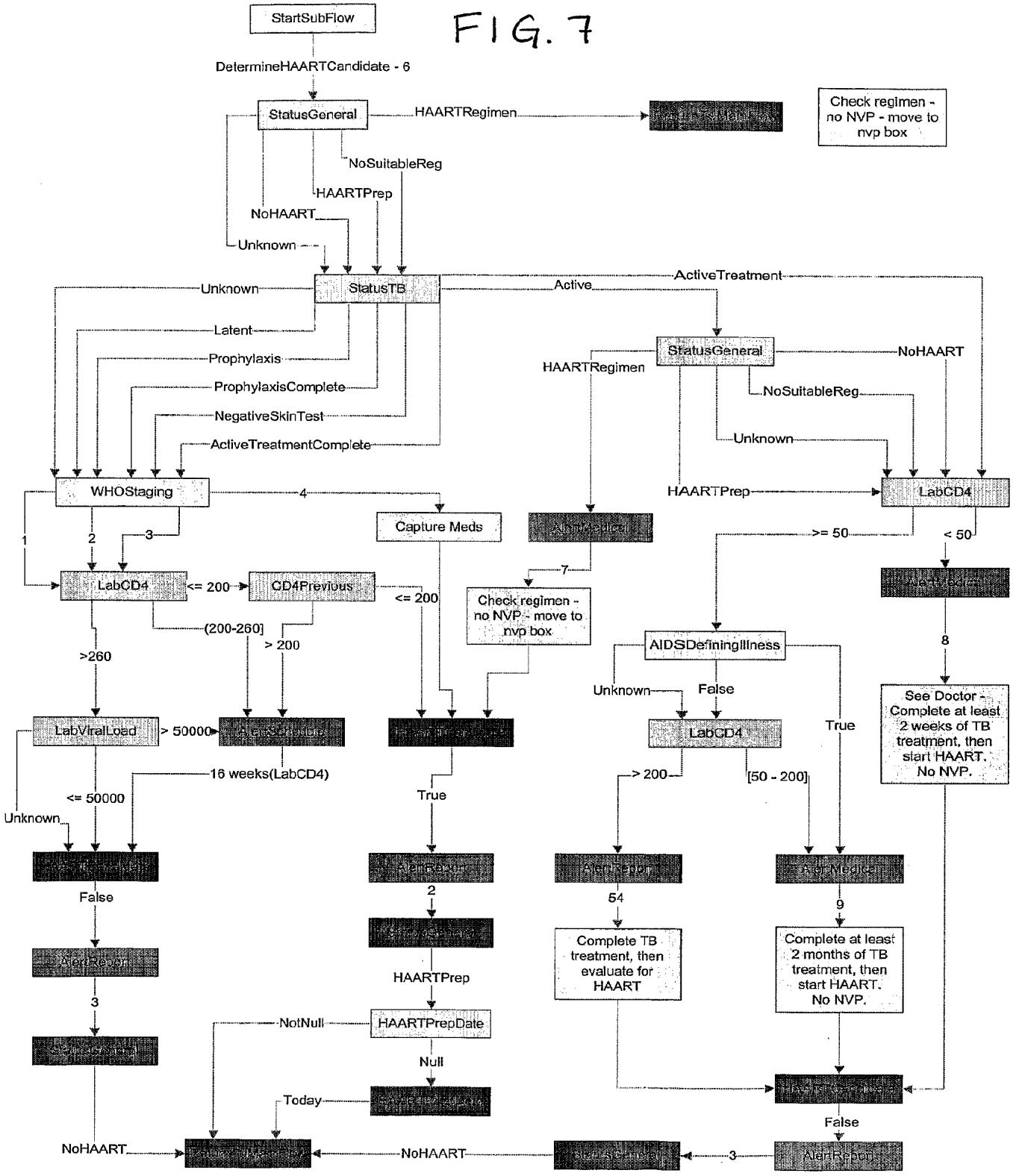

StartSubFlow
DetermineHAARTCandidate - 6
StatusGeneral
HAARTRegimen
Check regimen - no NVP - move to nvp box
NoSuitableReg
HAARTPrep
NoHAART
Unknown
StatusTB
Unknown
Active
ActiveTreatment
Latent
Prophylaxis
ProphylaxisComplete
NegativeSkinTest
ActiveTreatmentComplete
StatusGeneral
HAARTRegimen
NoHAART
NoSuitableReg
Unknown
WHOStaging
4
HAARTPrep
LabCD4
Capture Meds
1
2
3
7
>= 50
< 50
LabCD4
<= 200
CD4Previous
<= 200
Check regimen - no NVP - move to nvp box
(200-260]
> 200
>260
AIDSDefiningIllness
8
Unknown
False
True
LabViralLoad
> 50000
LabCD4
See Doctor - Complete at least 2 weeks of TB treatment, then start HAART. No NVP.
16 weeks(LabCD4)
<= 50000
> 200
[50 - 200]
True
Unknown
False
2
54
9
HAARTPrep
Complete TB treatment, then evaluate for HAART
Complete at least 2 months of TB treatment, then start HAART. No NVP.
3
NotNull
HAARTPrepDate
Null
Today
False
NoHAART
NoHAART
3

FIG. 8

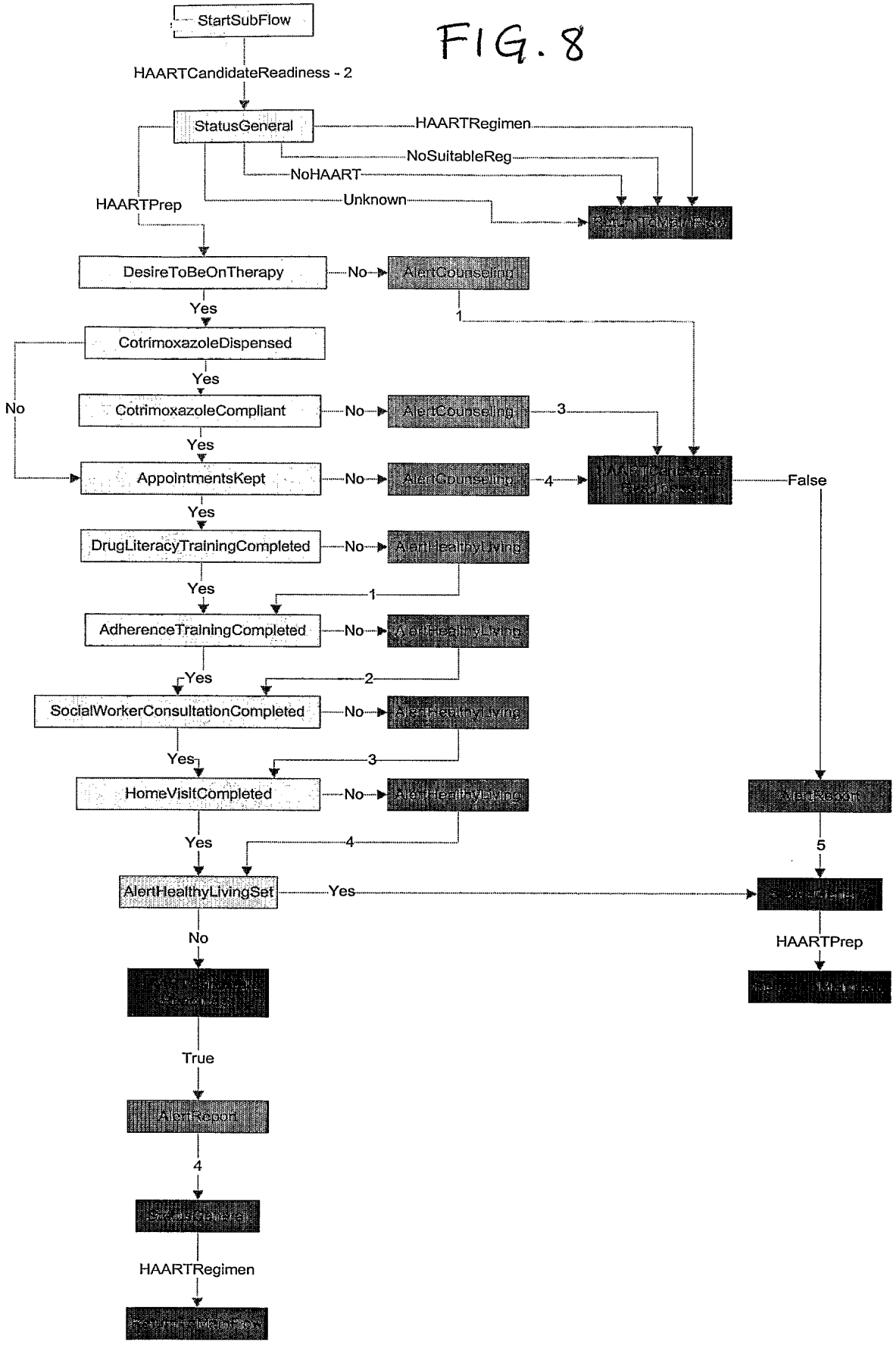

StartSubFlow
HAARTCandidateReadiness - 2
StatusGeneral
HAARTRegimen
NoSuitableReg
NoHAART
Unknown
HAARTPrep
DesireToBeOnTherapy
No
AlertCounseling
1
Yes
CotrimoxazoleDispensed
Yes
No
CotrimoxazoleCompliant
No
AlertCounseling
3
Yes
AppointmentsKept
No
AlertCounseling
4
False
Yes
DrugLiteracyTrainingCompleted
No
AlertHealthyLiving
Yes
1
AdherenceTrainingCompleted
No
AlertHealthyLiving
Yes
2
SocialWorkerConsultationCompleted
No
AlertHealthyLiving
Yes
3
HomeVisitCompleted
No
AlertHealthyLiving
Yes
4
AlertHealthyLivingSet
Yes
No
True
AlertReport
4
HAARTRegimen
AlertReport
5
HAARTPrep

FIG.9

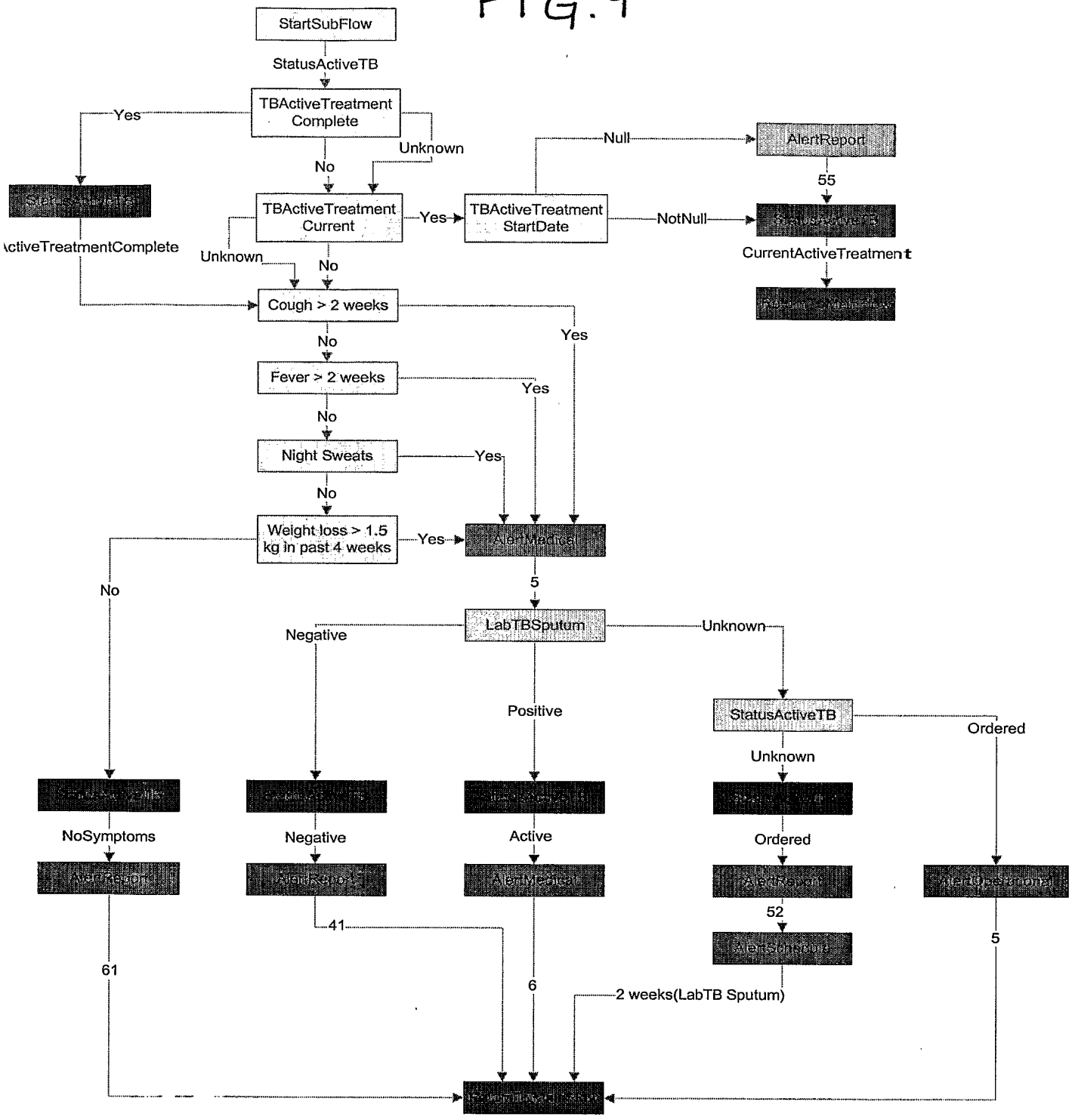

StartSubFlow
StatusActiveTB
TBActiveTreatment Complete
Yes
Unknown
No
TBActiveTreatment Current
Yes
TBActiveTreatment StartDate
Null
AlertReport
55
NotNull
CurrentActiveTreatment
Unknown
No
Cough > 2 weeks
Yes
No
Fever > 2 weeks
Yes
No
Night Sweats
Yes
No
Weight loss > 1.5 kg in past 4 weeks
Yes
No
5
LabTBSputum
Negative
Positive
Unknown
StatusActiveTB
Ordered
Unknown
NoSymptoms
Negative
Active
Ordered
52
41
61
6
5
2 weeks(LabTB Sputum)

FIG. 10

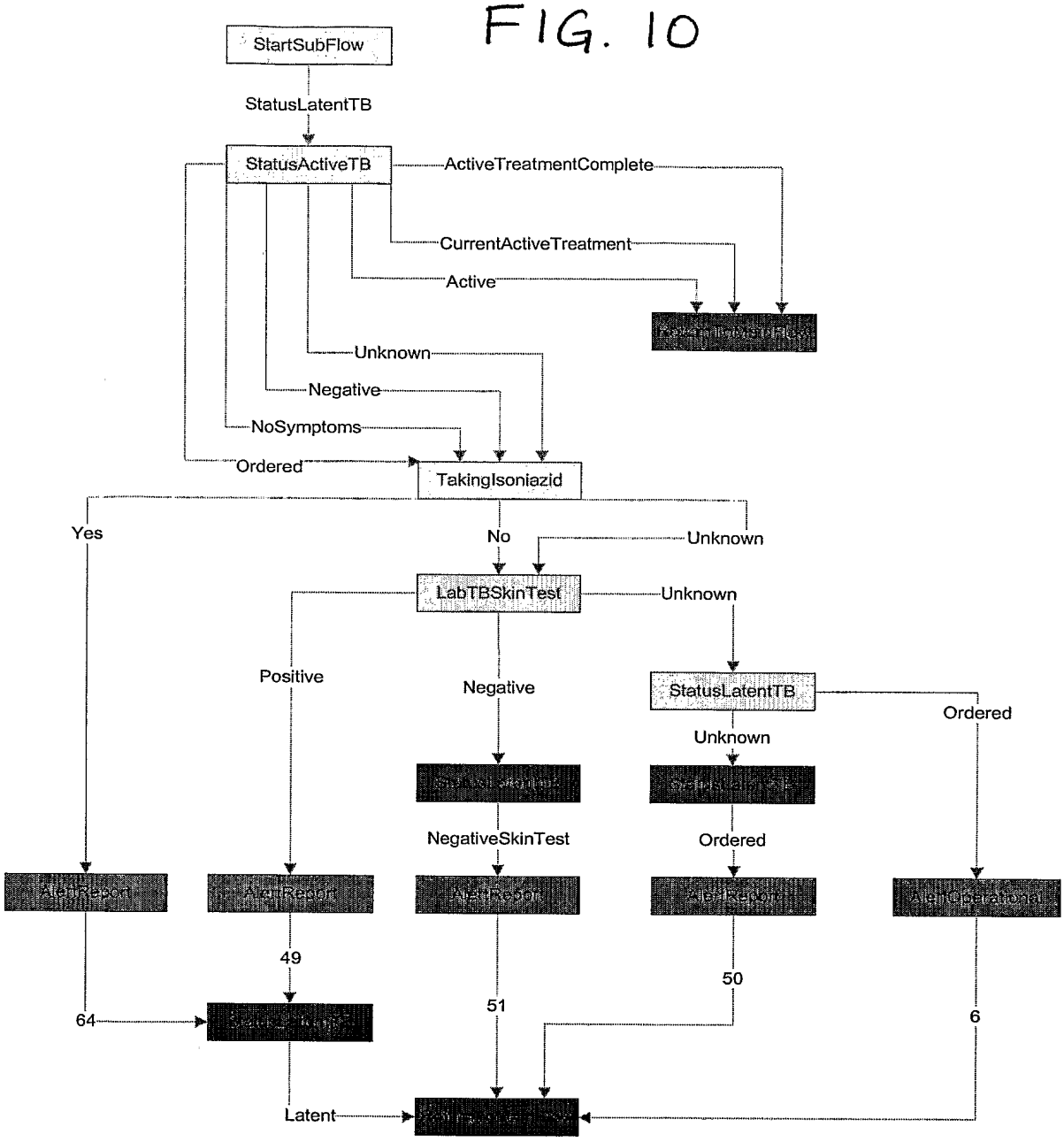

StartSubFlow
StatusLatentTB
StatusActiveTB
ActiveTreatmentComplete
CurrentActiveTreatment
Active
Unknown
Negative
NoSymptoms
Ordered
TakingIsoniazid
Yes
No
Unknown
LabTBSkinTest
Unknown
Positive
Negative
StatusLatentTB
Ordered
Unknown
NegativeSkinTest
Ordered
AlertReport
AlertReport
AlertReport
AlertReport
AlertOperations
49
50
64
51
6
Latent

FIG. 11

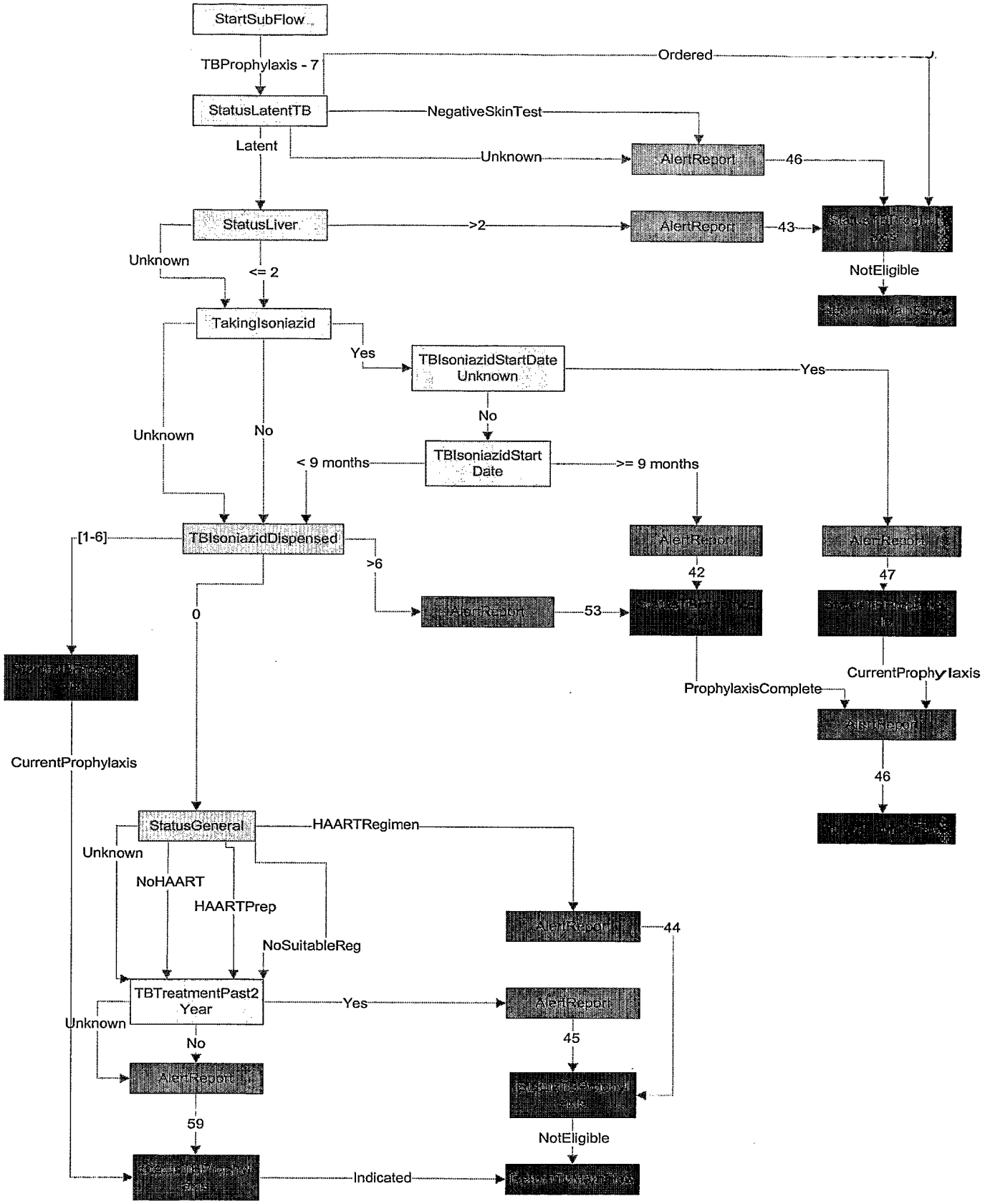

StartSubFlow
TBProphylaxis - 7
Ordered
StatusLatentTB
NegativeSkinTest
Latent
Unknown
AlertReport
46
StatusLiver
>2
AlertReport
43
NotEligible
Unknown
<= 2
TakingIsoniazid
Yes
TBIsoniazidStartDate Unknown
Yes
No
Unknown
No
< 9 months
TBIsoniazidStart Date
>= 9 months
[1-6]
TBIsoniazidDispensed
>6
AlertReport
53
AlertReport
42
AlertReport
47
0
CurrentProphylaxis
ProphylaxisComplete
CurrentProphylaxis
46
StatusGeneral
HAARTRegimen
Unknown
NoHAART
HAARTPrep
NoSuitableReg
AlertReport
44
TBTreatmentPast2 Year
Yes
AlertReport
Unknown
No
45
AlertReport
59
NotEligible
Indicated

FIG. 12

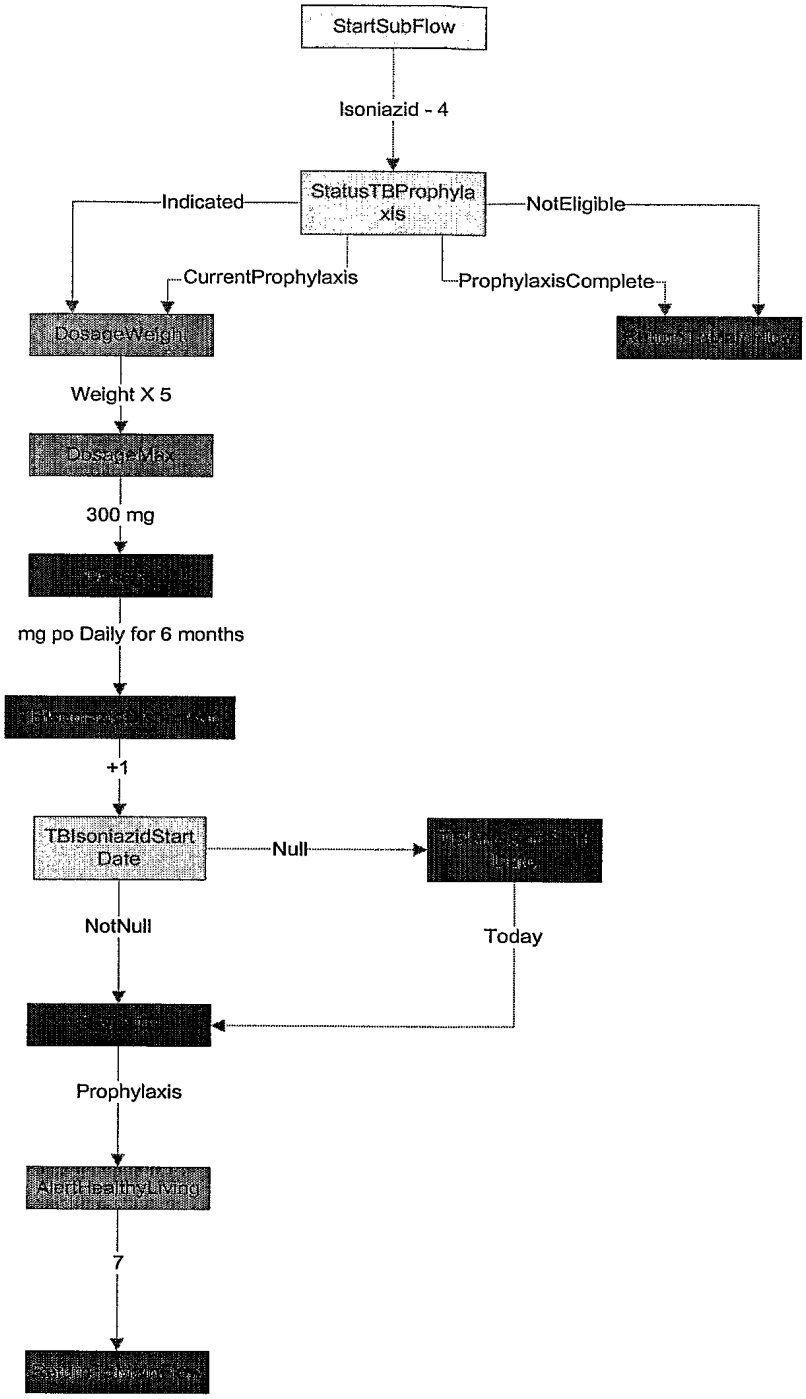

StartSubFlow
Isoniazid - 4
StatusTBProphylaxis
Indicated
NotEligible
CurrentProphylaxis
ProphylaxisComplete
DosageWeight
Weight X 5
DosageMax
300 mg
mg po Daily for 6 months
+1
TBIsoniazidStartDate
Null
NotNull
Today
Prophylaxis
AlertHealthyLiving
7

FIG. 13

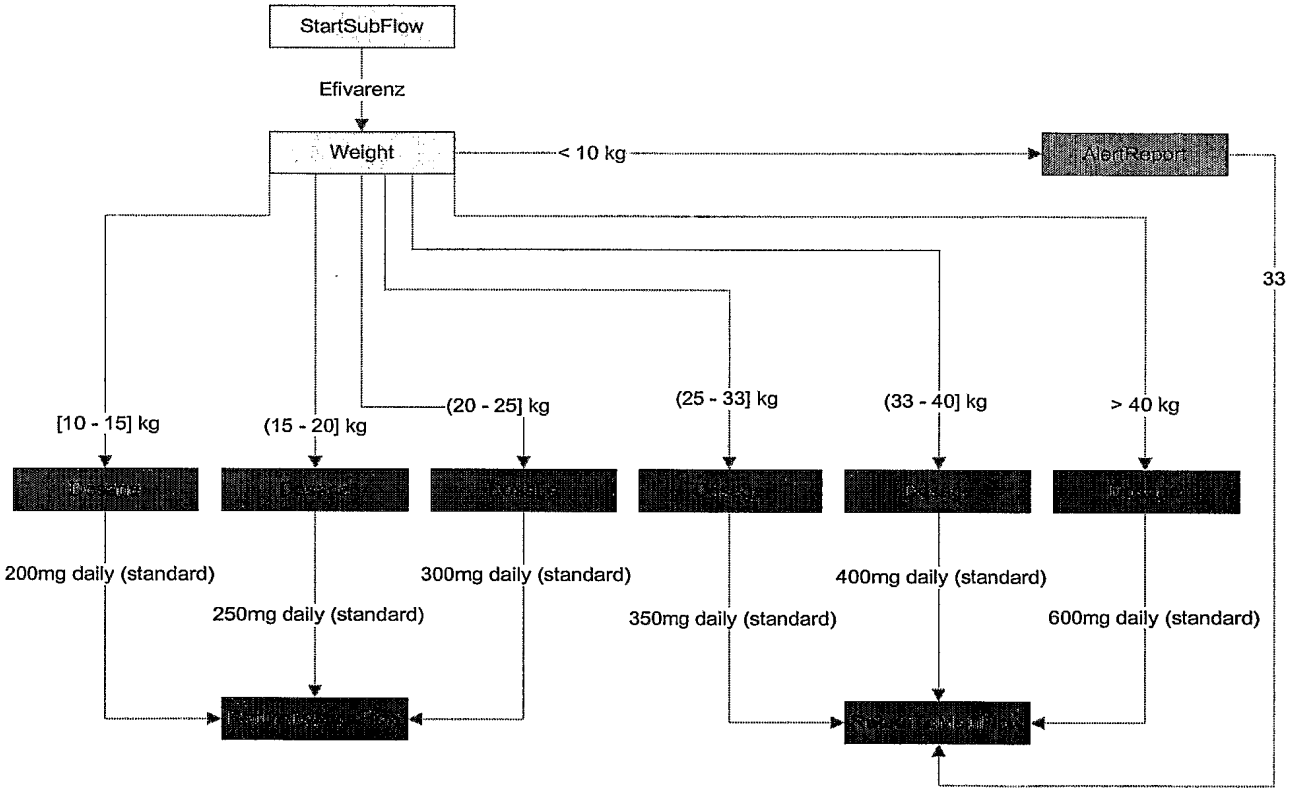

StartSubFlow
Efivarenz
Weight
< 10 kg
AlertReport
33
[10 - 15] kg
(15 - 20] kg
(20 - 25] kg
(25 - 33] kg
(33 - 40] kg
> 40 kg
200mg daily (standard)
250mg daily (standard)
300mg daily (standard)
350mg daily (standard)
400mg daily (standard)
600mg daily (standard)

FIG. 14

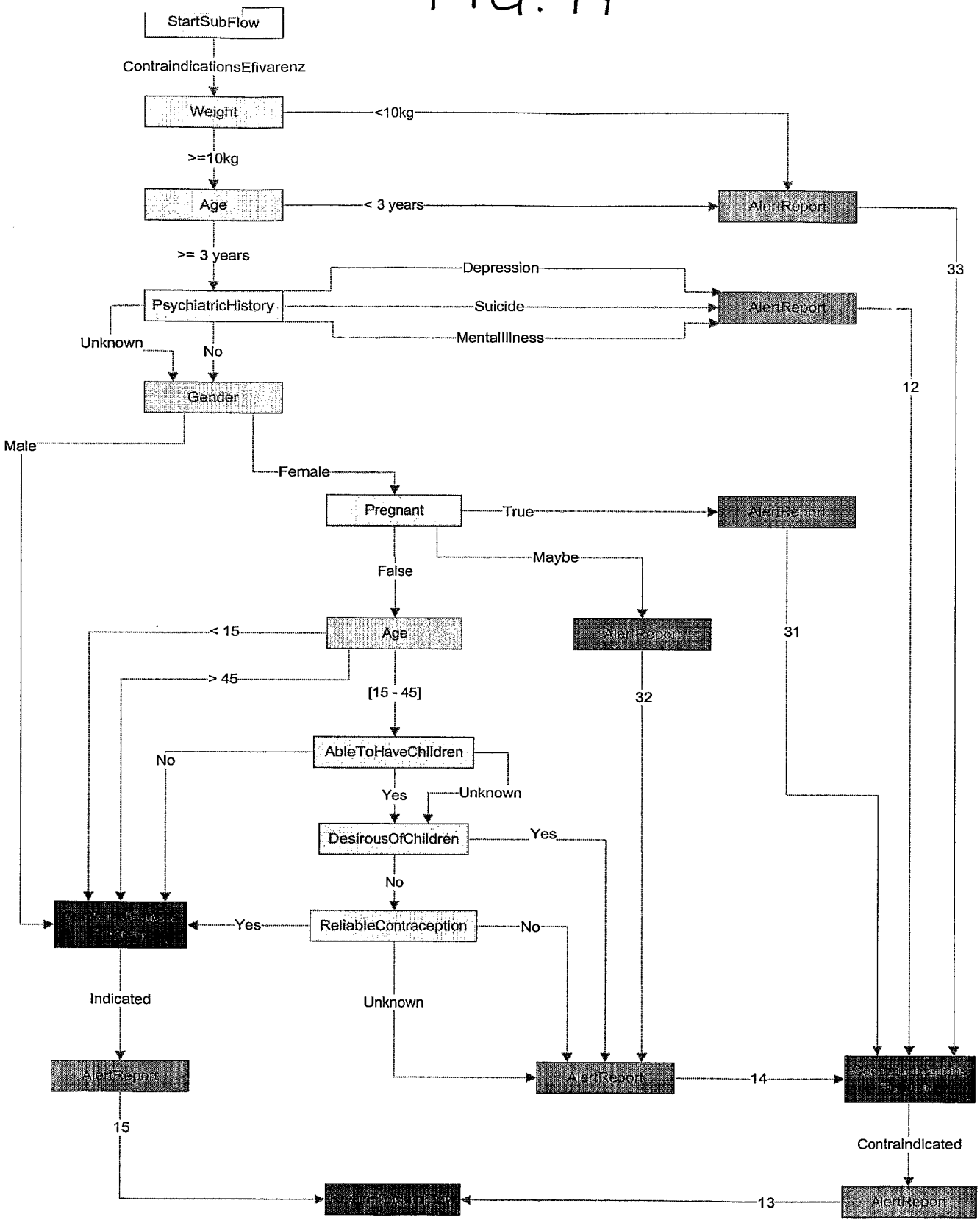

StartSubFlow
ContraindicationsEfivarenz
Weight
<10kg
>=10kg
Age
< 3 years
AlertReport
>= 3 years
Depression
PsychiatricHistory
Suicide
AlertReport
MentalIllness
Unknown
No
Gender
Male
Female
Pregnant
True
AlertReport
Maybe
False
Age
< 15
> 45
[15 - 45]
AlertReport
AbleToHaveChildren
No
Yes
Unknown
DesirousOfChildren
Yes
No
Yes
ReliableContraception
No
Indicated
Unknown
AlertReport
AlertReport
14
Contraindicated
AlertReport
15
13
33
12
31
32

FIG. 15

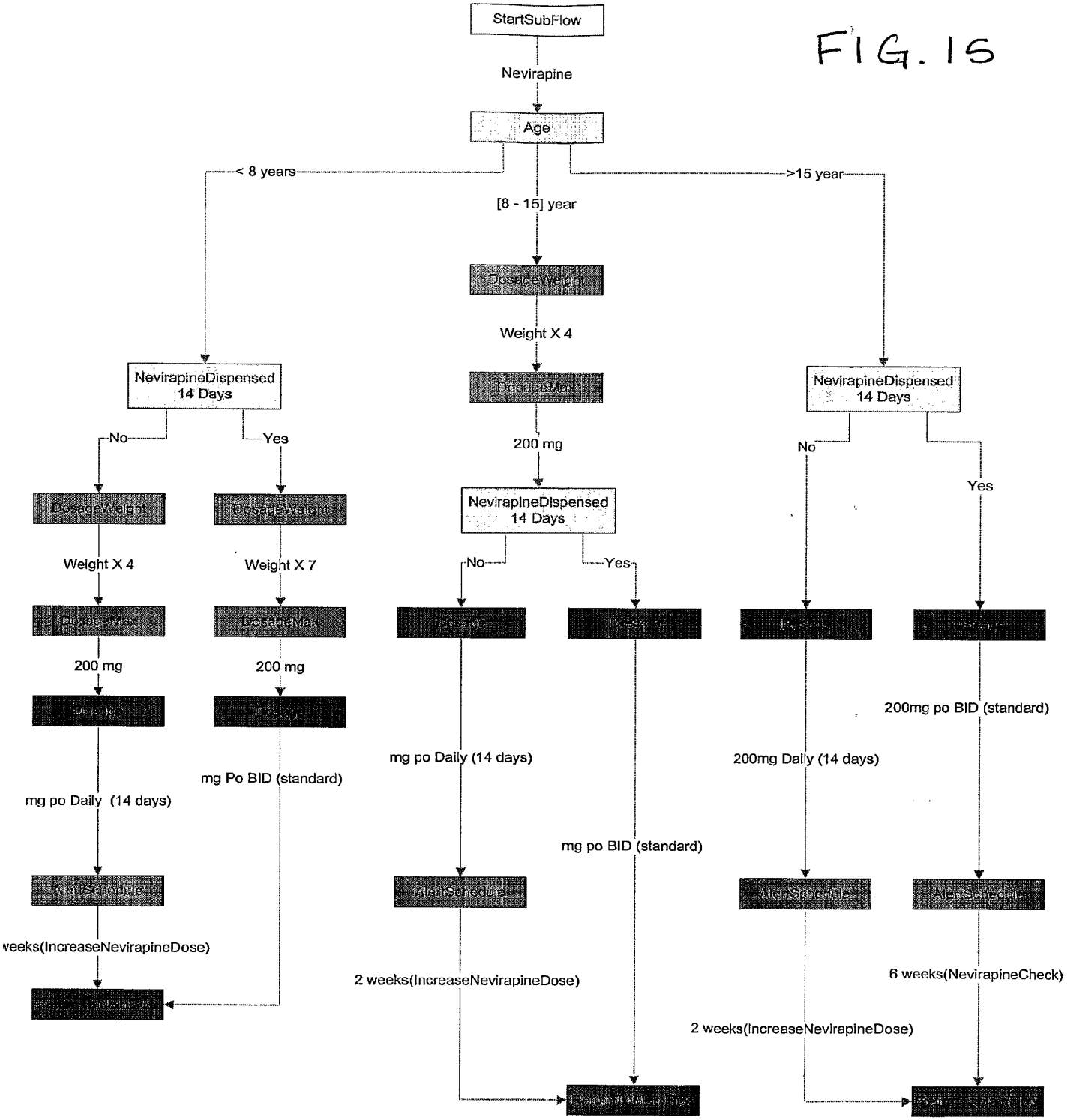

StartSubFlow
Nevirapine
Age
< 8 years
[8 - 15] year
>15 year
DosageWeight
Weight X 4
NevirapineDispensed 14 Days
No
Yes
200 mg
Weight X 4
Weight X 7
200 mg
200 mg
mg po Daily (14 days)
mg Po BID (standard)
mg po Daily (14 days)
mg po BID (standard)
200mg Daily (14 days)
200mg po BID (standard)
weeks(IncreaseNevirapineDose)
2 weeks(IncreaseNevirapineDose)
6 weeks(NevirapineCheck)
2 weeks(IncreaseNevirapineDose)

FIG. 16

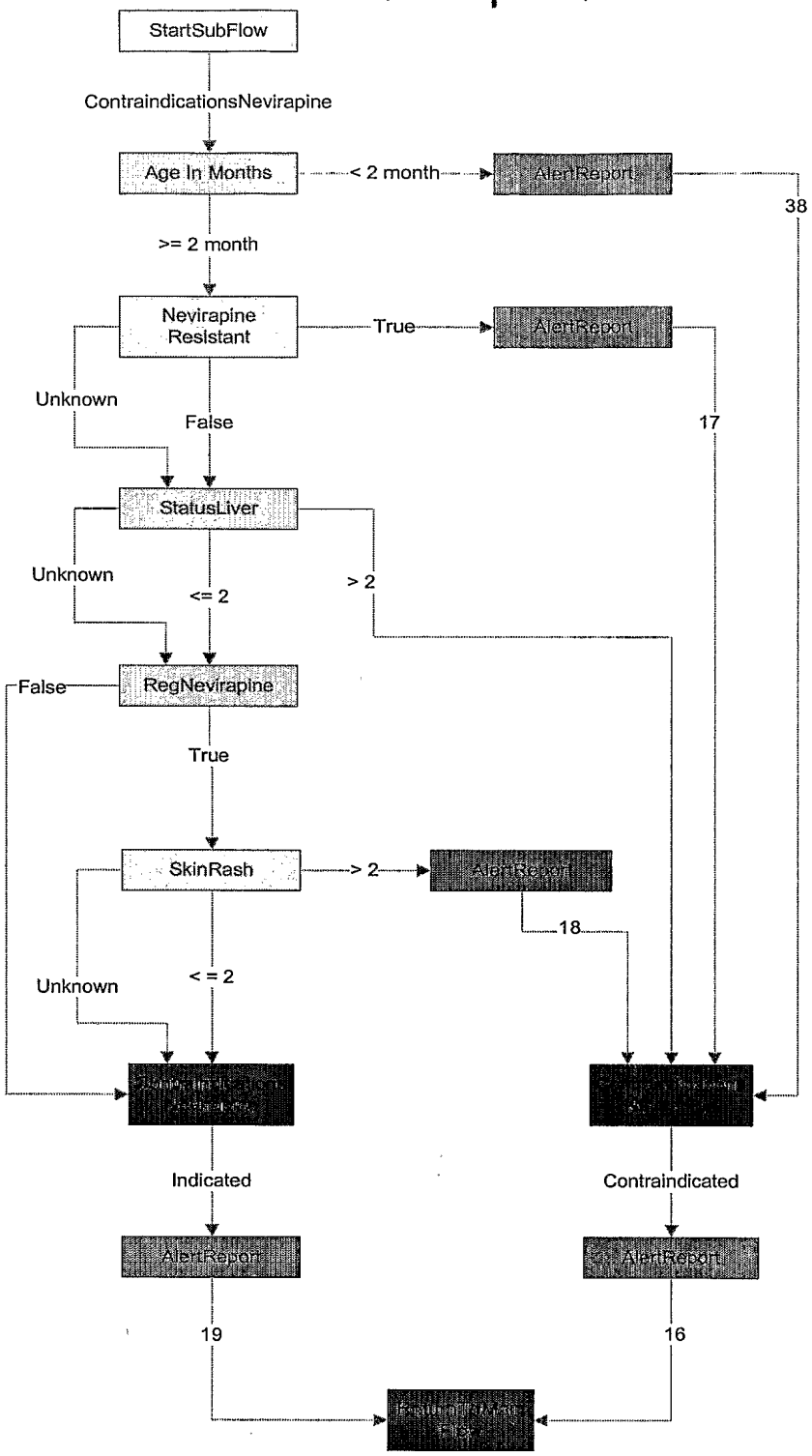

StartSubFlow
ContraindicationsNevirapine
Age In Months
< 2 month
AlertReport
38
>= 2 month
Nevirapine Resistant
True
AlertReport
Unknown
False
17
StatusLiver
Unknown
<= 2
> 2
False
RegNevirapine
True
SkinRash
> 2
AlertReport
18
Unknown
< = 2
Indicated
Contraindicated
AlertReport
AlertReport
19
16

FIG. 17

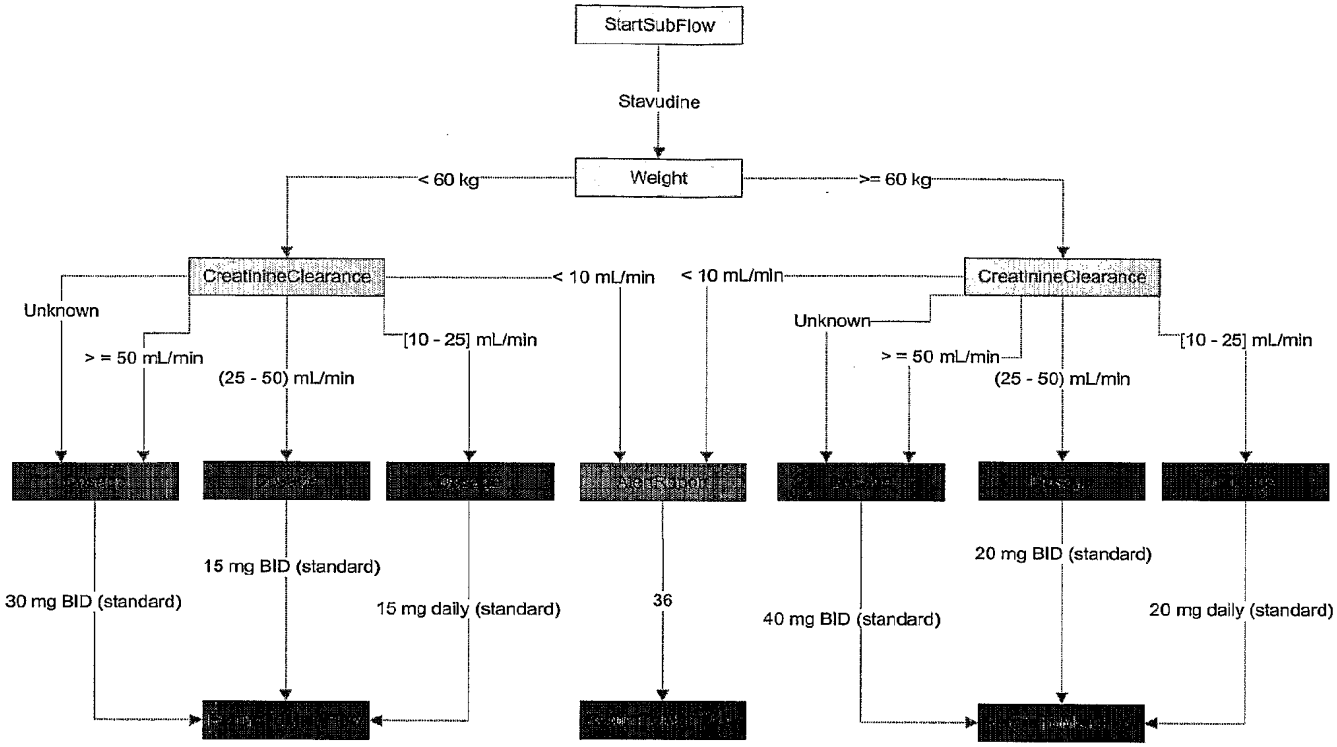

StartSubFlow
Stavudine
Weight
< 60 kg
>= 60 kg
CreatinineClearance
< 10 mL/min
Unknown
> = 50 mL/min
(25 - 50) mL/min
[10 - 25] mL/min
30 mg BID (standard)
15 mg BID (standard)
15 mg daily (standard)
36
CreatinineClearance
< 10 mL/min
Unknown
> = 50 mL/min
(25 - 50) mL/min
[10 - 25] mL/min
40 mg BID (standard)
20 mg BID (standard)
20 mg daily (standard)

FIG. 18

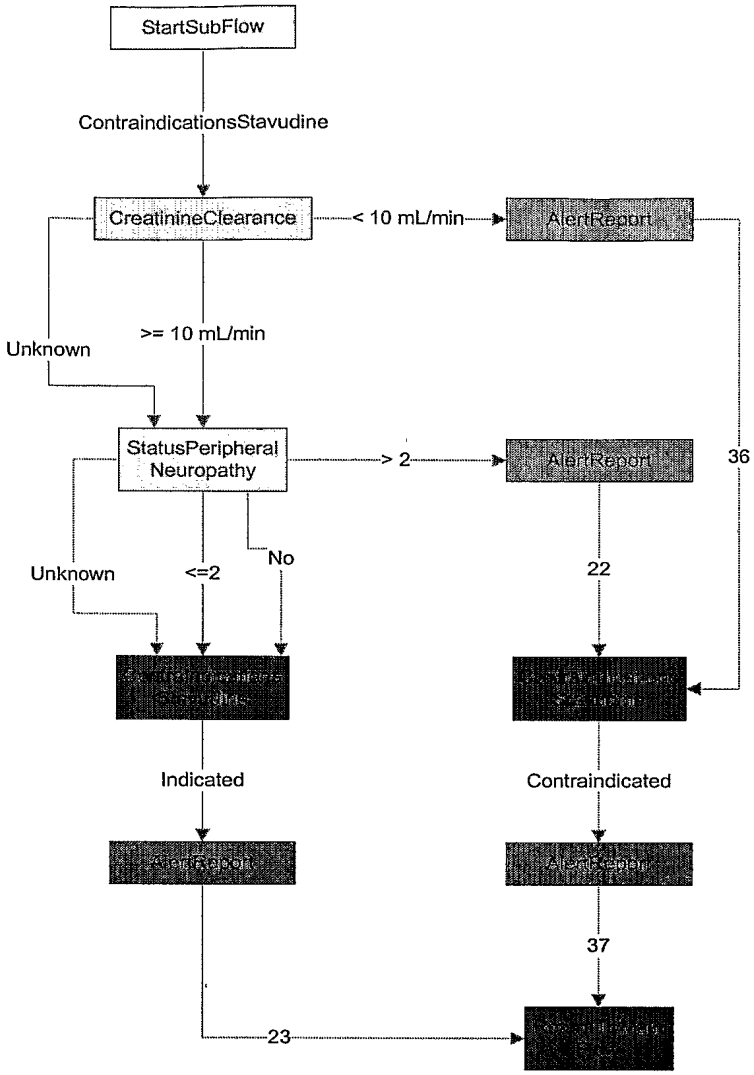

StartSubFlow
ContraindicationsStavudine
CreatinineClearance
< 10 mL/min
AlertReport
>= 10 mL/min
Unknown
StatusPeripheral Neuropathy
> 2
AlertReport
36
Unknown
<=2
No
22
Indicated
Contraindicated
37
23

FIG. 19

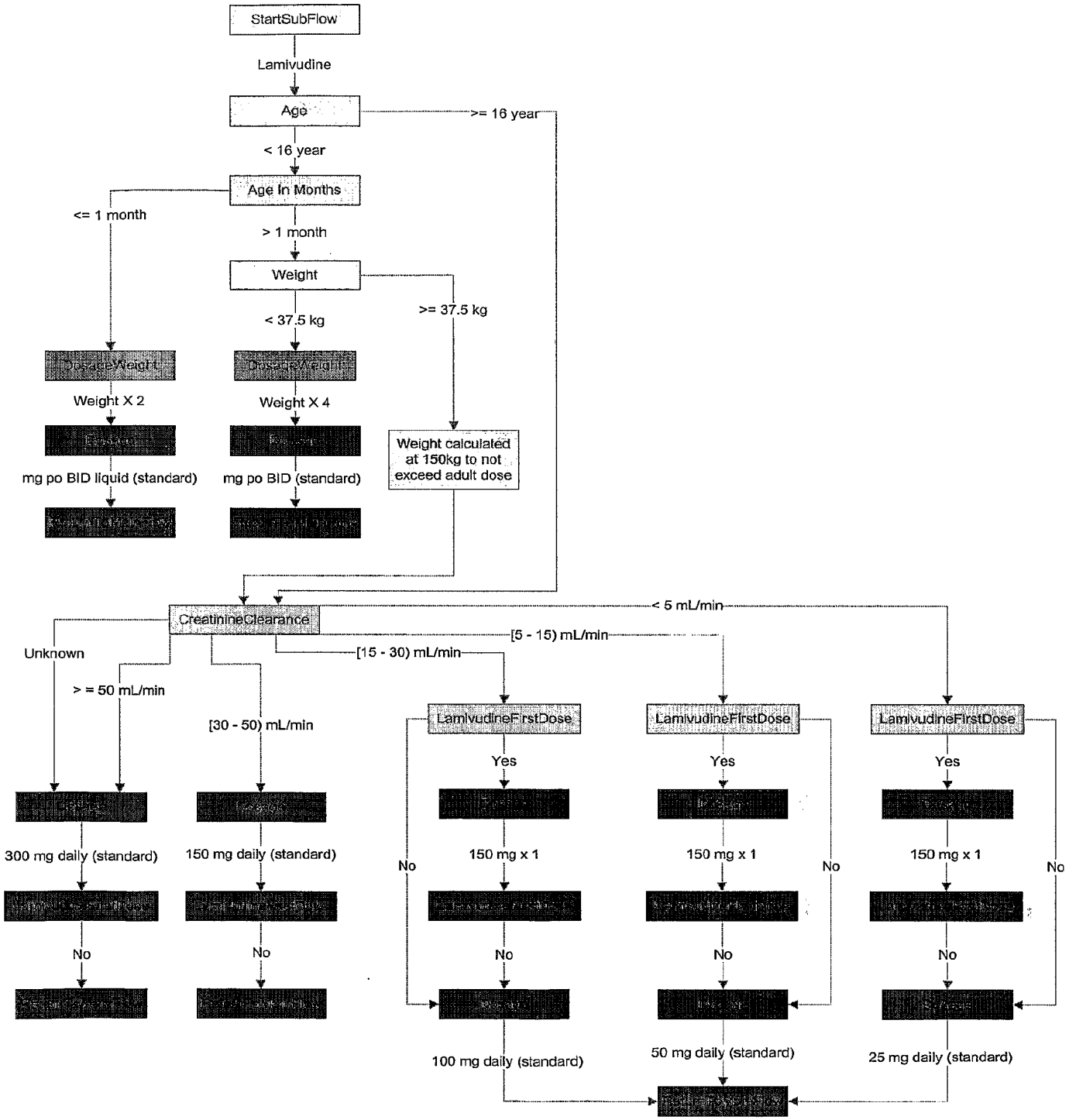

StartSubFlow
Lamivudine
Age
>= 16 year
< 16 year
Age In Months
<= 1 month
> 1 month
Weight
< 37.5 kg
>= 37.5 kg
Weight X 2
Weight X 4
mg po BID liquid (standard)
mg po BID (standard)
Weight calculated at 150kg to not exceed adult dose
CreatinineClearance
< 5 mL/min
[5 - 15) mL/min
[15 - 30) mL/min
[30 - 50) mL/min
> = 50 mL/min
Unknown
LamivudineFirstDose
Yes
No
150 mg x 1
300 mg daily (standard)
150 mg daily (standard)
100 mg daily (standard)
50 mg daily (standard)
25 mg daily (standard)

FIG. 20

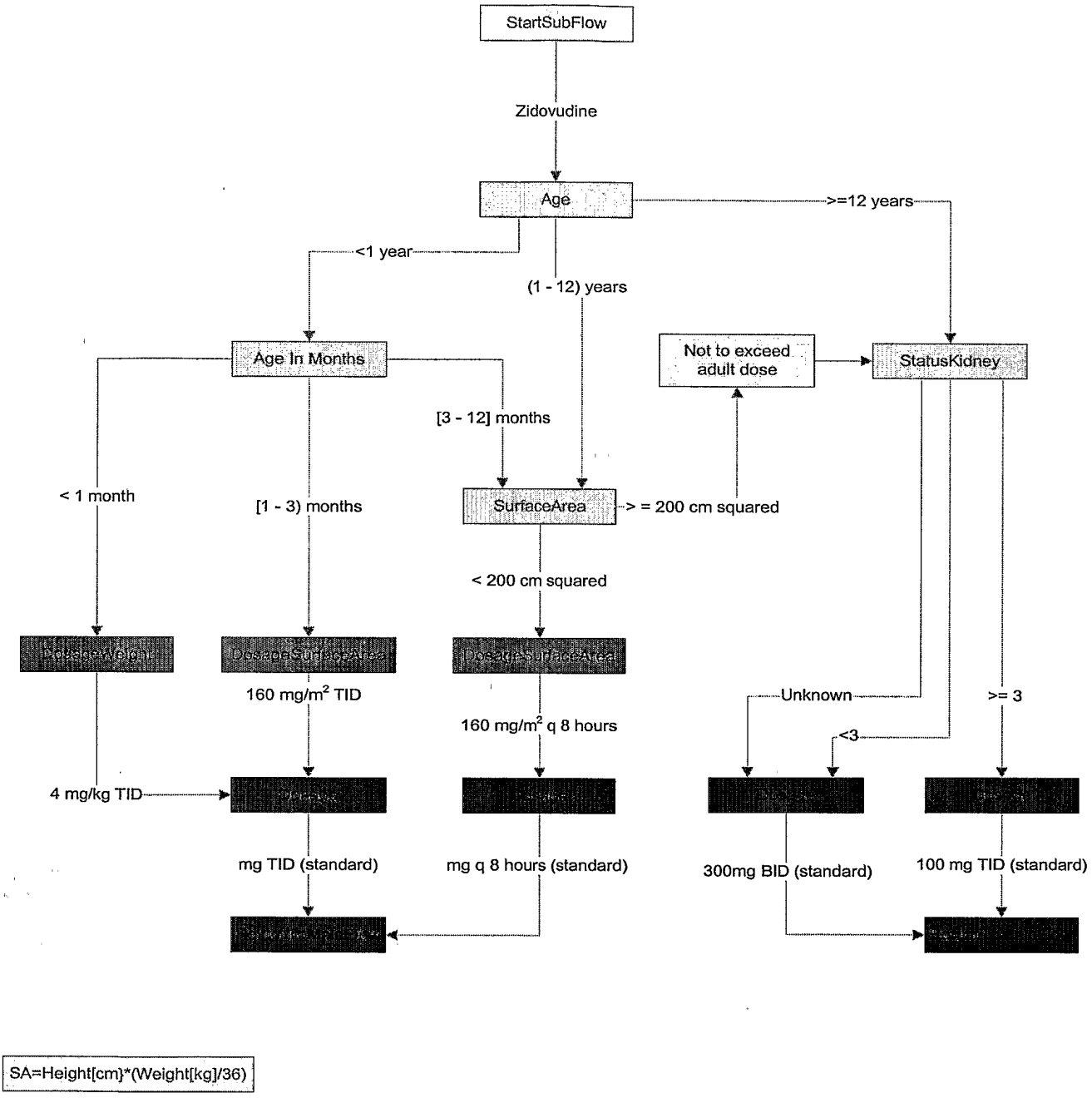

StartSubFlow
Zidovudine
Age
>=12 years
<1 year
(1 - 12) years
Age In Months
Not to exceed adult dose
StatusKidney
[3 - 12] months
< 1 month
[1 - 3) months
SurfaceArea
> = 200 cm squared
< 200 cm squared
160 mg/m2 TID
160 mg/m2 q 8 hours
Unknown
<3
>= 3
4 mg/kg TID
mg TID (standard)
mg q 8 hours (standard)
300mg BID (standard)
100 mg TID (standard)
SA=Height[cm]*(Weight[kg]/36)

FIG. 21

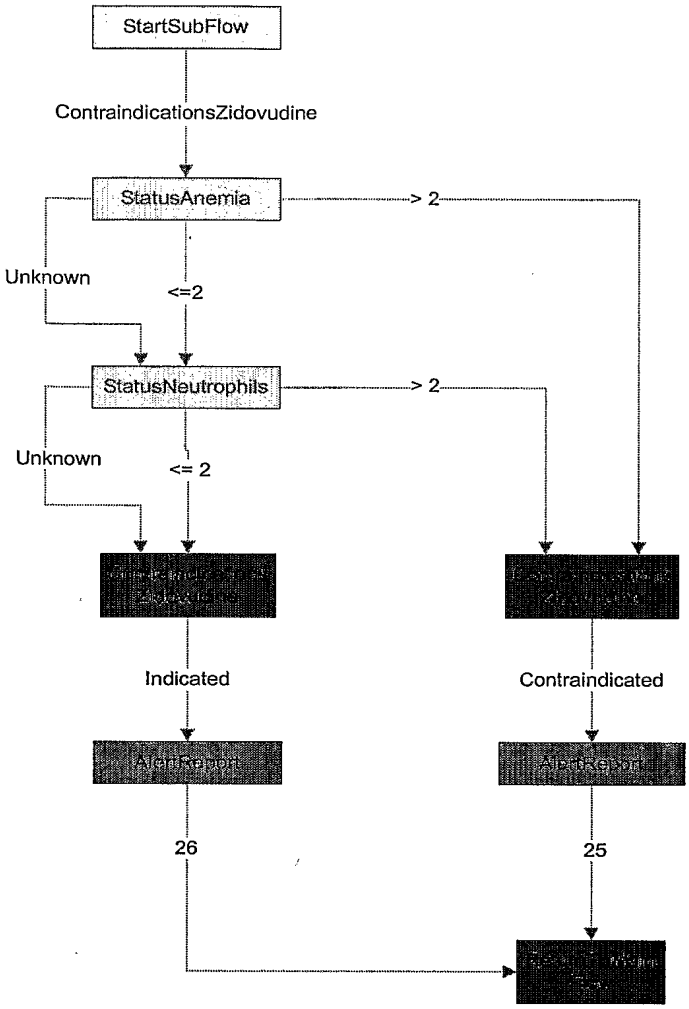

StartSubFlow
ContraindicationsZidovudine
StatusAnemia
> 2
Unknown
<=2
StatusNeutrophils
> 2
Unknown
<= 2
Indicated
Contraindicated
26
25

FIG. 22

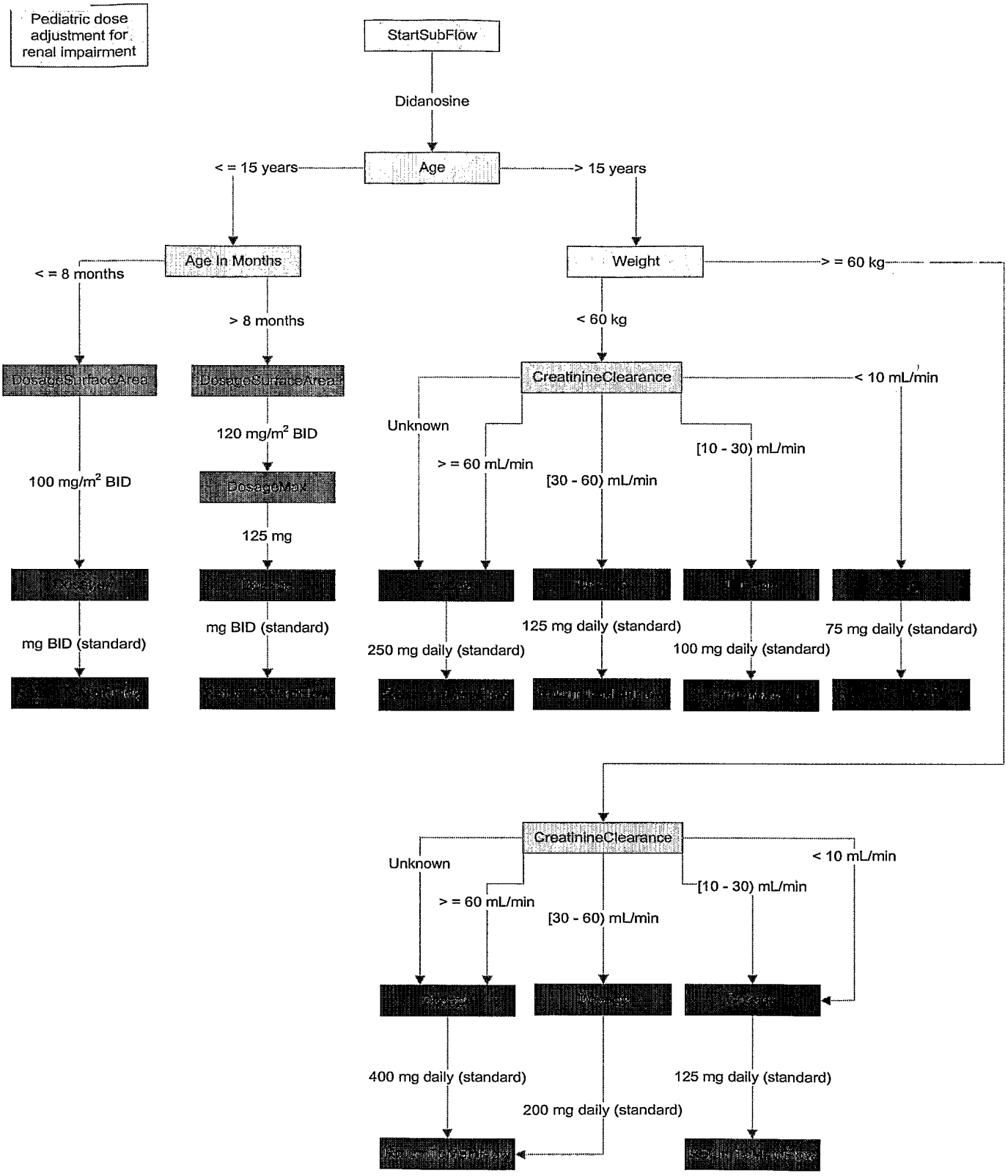

Pediatric dose adjustment for renal impairment
StartSubFlow
Didanosine
Age
< = 15 years
> 15 years
Age In Months
< = 8 months
> 8 months
Weight
> = 60 kg
< 60 kg
DosageSurfaceArea
DosageSurfaceArea
100 mg/m2 BID
120 mg/m2 BID
DosageMax
125 mg
mg BID (standard)
mg BID (standard)
CreatinineClearance
< 10 mL/min
Unknown
> = 60 mL/min
[30 - 60) mL/min
[10 - 30) mL/min
250 mg daily (standard)
125 mg daily (standard)
100 mg daily (standard)
75 mg daily (standard)
CreatinineClearance
Unknown
> = 60 mL/min
[30 - 60) mL/min
[10 - 30) mL/min
< 10 mL/min
400 mg daily (standard)
200 mg daily (standard)
125 mg daily (standard)

FIG. 23

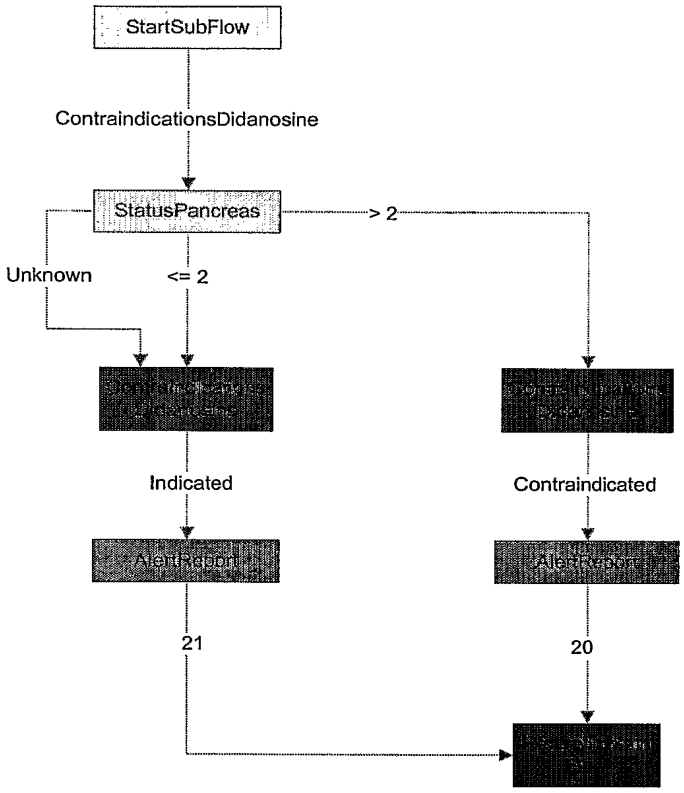

StartSubFlow
ContraindicationsDidanosine
StatusPancreas
> 2
Unknown
<= 2
Indicated
Contraindicated
21
20

FIG. 24

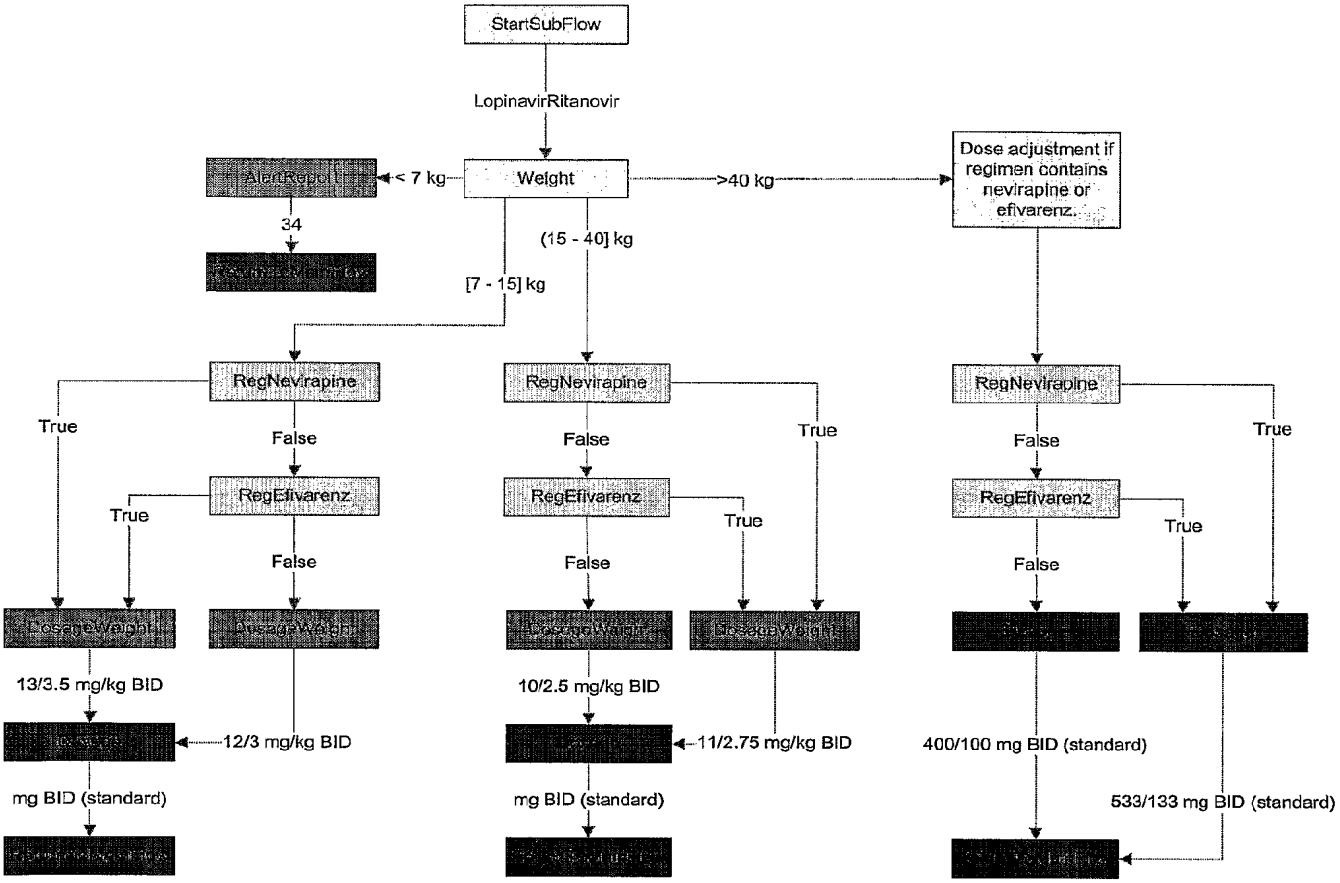

StartSubFlow
LopinavirRitanovir
Weight
< 7 kg
>40 kg
Dose adjustment if regimen contains nevirapine or efivarenz.
34
(15 - 40] kg
[7 - 15] kg
RegNevirapine
RegNevirapine
RegNevirapine
True
False
True
False
True
False
RegEfivarenz
RegEfivarenz
RegEfivarenz
True
False
True
False
True
False
13/3.5 mg/kg BID
10/2.5 mg/kg BID
12/3 mg/kg BID
11/2.75 mg/kg BID
400/100 mg BID (standard)
mg BID (standard)
mg BID (standard)
533/133 mg BID (standard)

FIG. 25

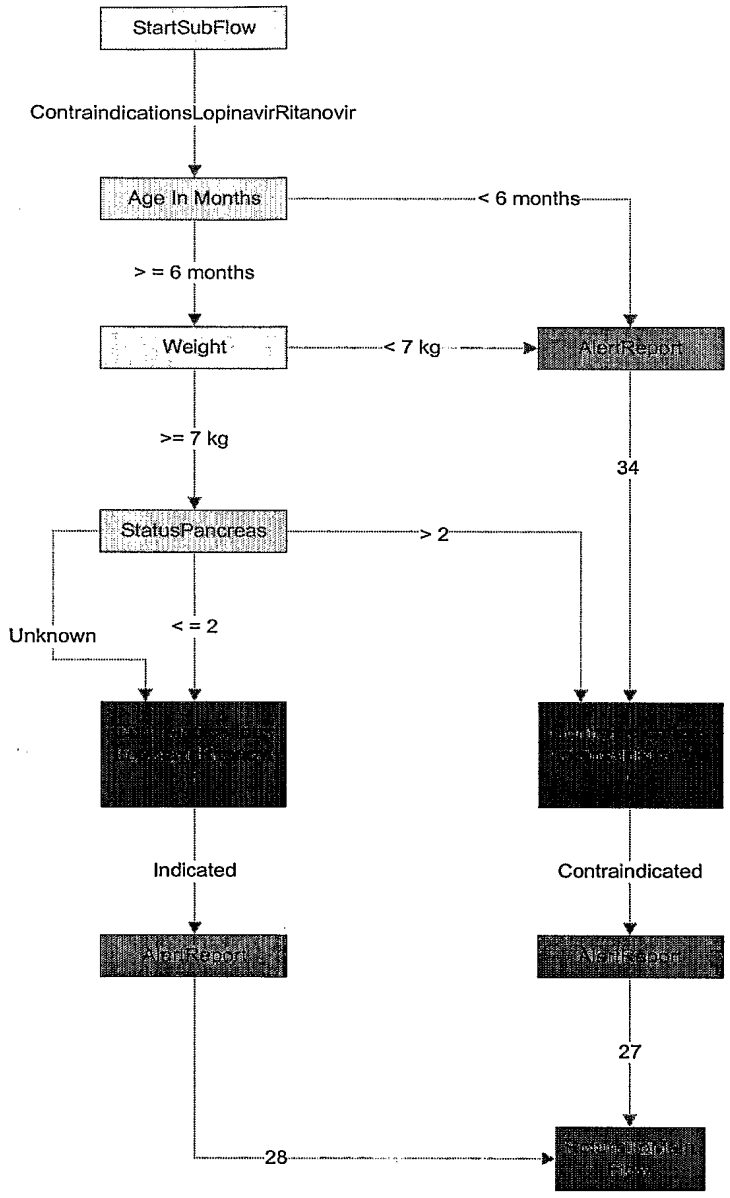

StartSubFlow
ContraindicationsLopinavirRitanovir
Age In Months
< 6 months
> = 6 months
Weight
< 7 kg
>= 7 kg
34
StatusPancreas
> 2
Unknown
< = 2
Indicated
Contraindicated
27
28

FIG. 26

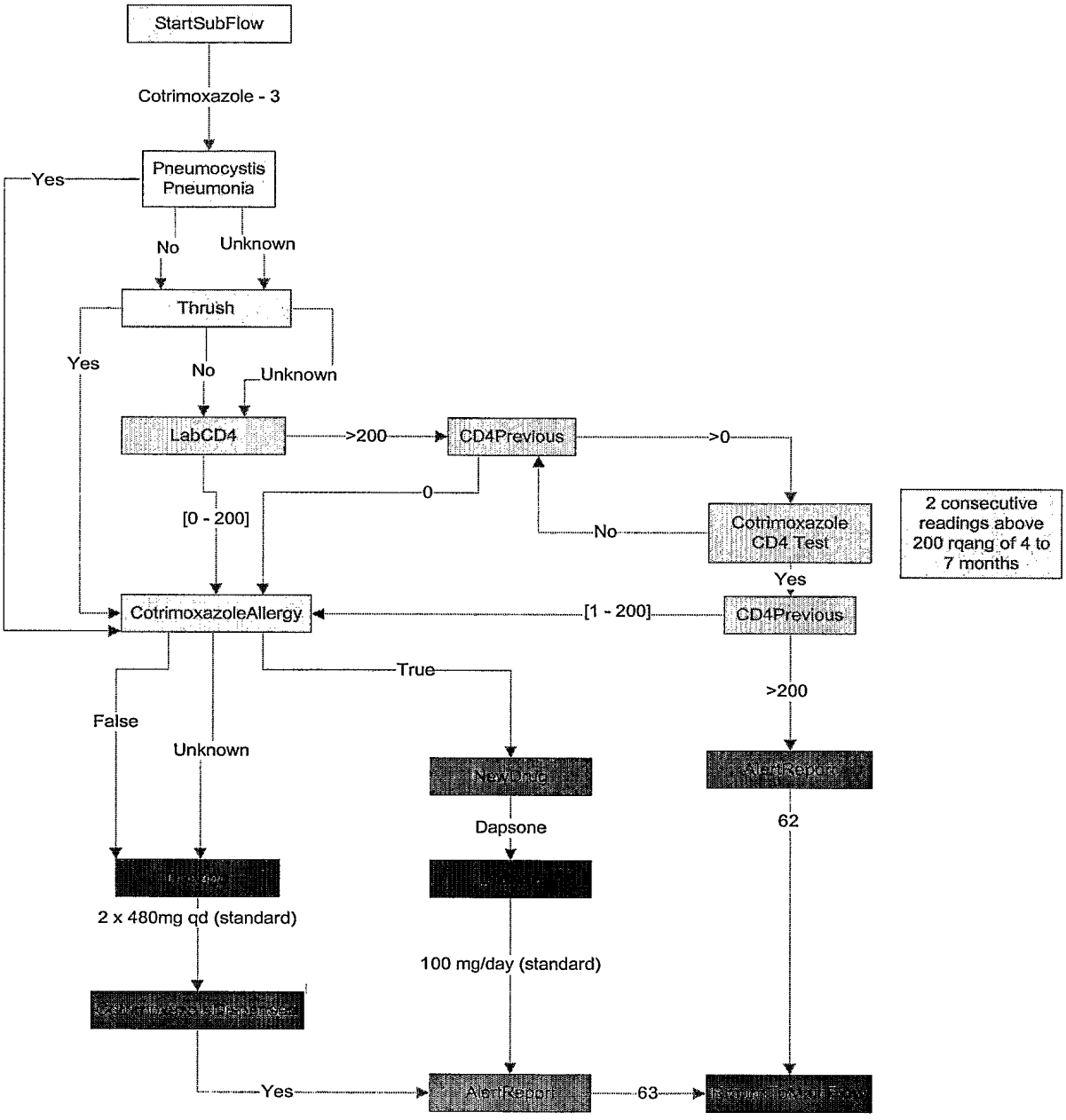

StartSubFlow
Cotrimoxazole - 3
Pneumocystis Pneumonia
Yes
No
Unknown
Thrush
Yes
No
Unknown
LabCD4
>200
CD4Previous
>0
0
[0 - 200]
No
Cotrimoxazole CD4 Test
2 consecutive readings above 200 rqang of 4 to 7 months
Yes
CotrimoxazoleAllergy
[1 - 200]
CD4Previous
True
>200
False
Unknown
Dapsone
62
2 x 480mg qd (standard)
100 mg/day (standard)
Yes
63

FIG. 27

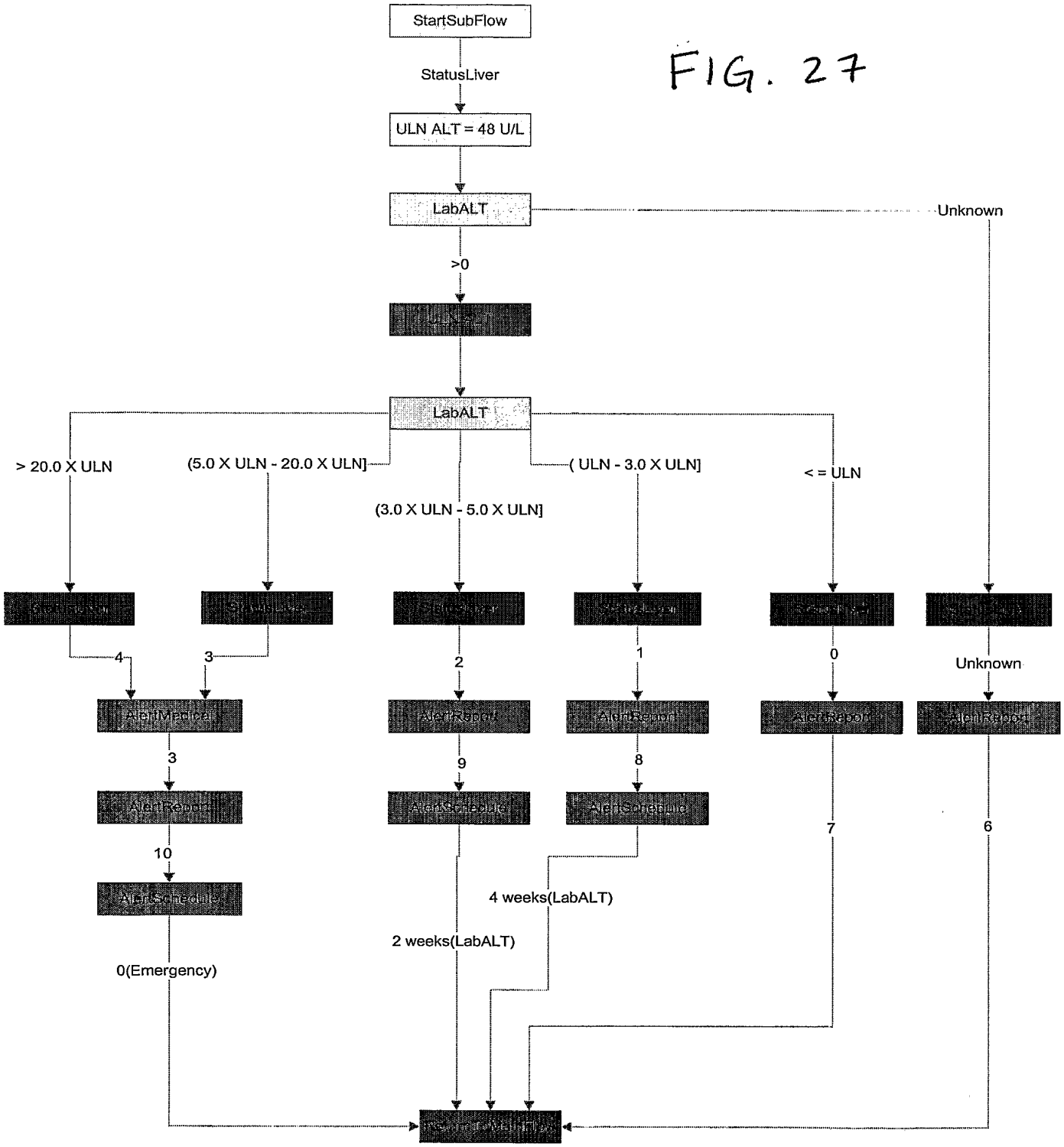

StartSubFlow
StatusLiver
ULN ALT = 48 U/L
LabALT
Unknown
>0
LabALT
> 20.0 X ULN
(5.0 X ULN - 20.0 X ULN]
(3.0 X ULN - 5.0 X ULN]
(ULN - 3.0 X ULN]
< = ULN
4
3
2
1
0
Unknown
AlertReport
AlertReport
AlertReport
AlertReport
AlertReport
3
9
8
7
6
AlertSchedule
AlertSchedule
10
4 weeks(LabALT)
2 weeks(LabALT)
0(Emergency)

FIG. 28

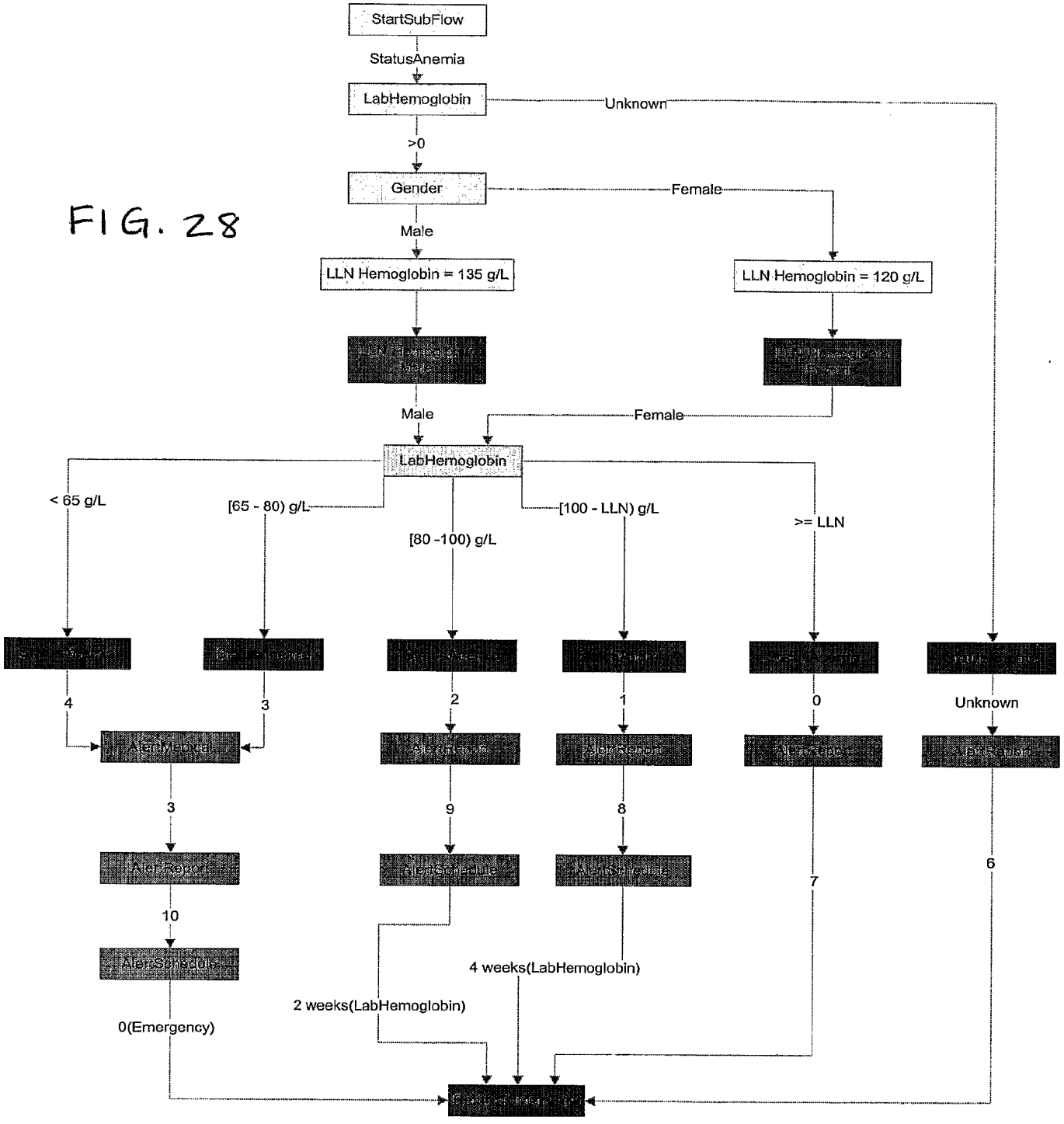

StartSubFlow
StatusAnemia
LabHemoglobin
Unknown
>0
Gender
Female
Male
LLN Hemoglobin = 135 g/L
LLN Hemoglobin = 120 g/L
Male
Female
LabHemoglobin
< 65 g/L
[65 - 80) g/L
[80 -100) g/L
[100 - LLN) g/L
>= LLN
4
3
2
1
0
Unknown
3
9
8
7
6
10
4 weeks(LabHemoglobin)
2 weeks(LabHemoglobin)
0(Emergency)

FIG. 29

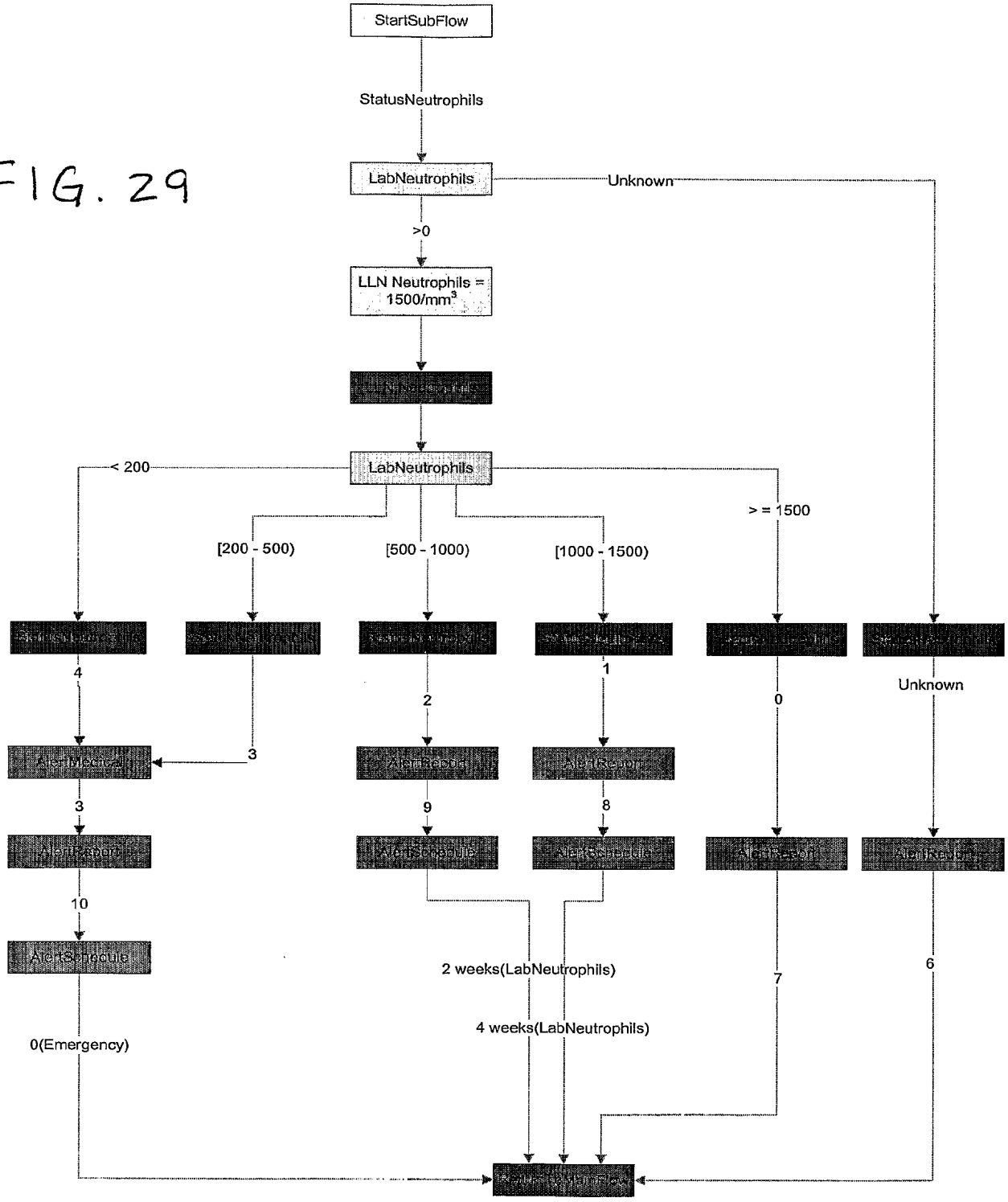

StartSubFlow
StatusNeutrophils
LabNeutrophils
Unknown
>0
LLN Neutrophils = 1500/mm3
LabNeutrophils
< 200
[200 - 500)
[500 - 1000)
[1000 - 1500)
> = 1500
4
3
2
1
0
Unknown
3
9
8
10
2 weeks(LabNeutrophils)
4 weeks(LabNeutrophils)
7
6
0(Emergency)

FIG. 30

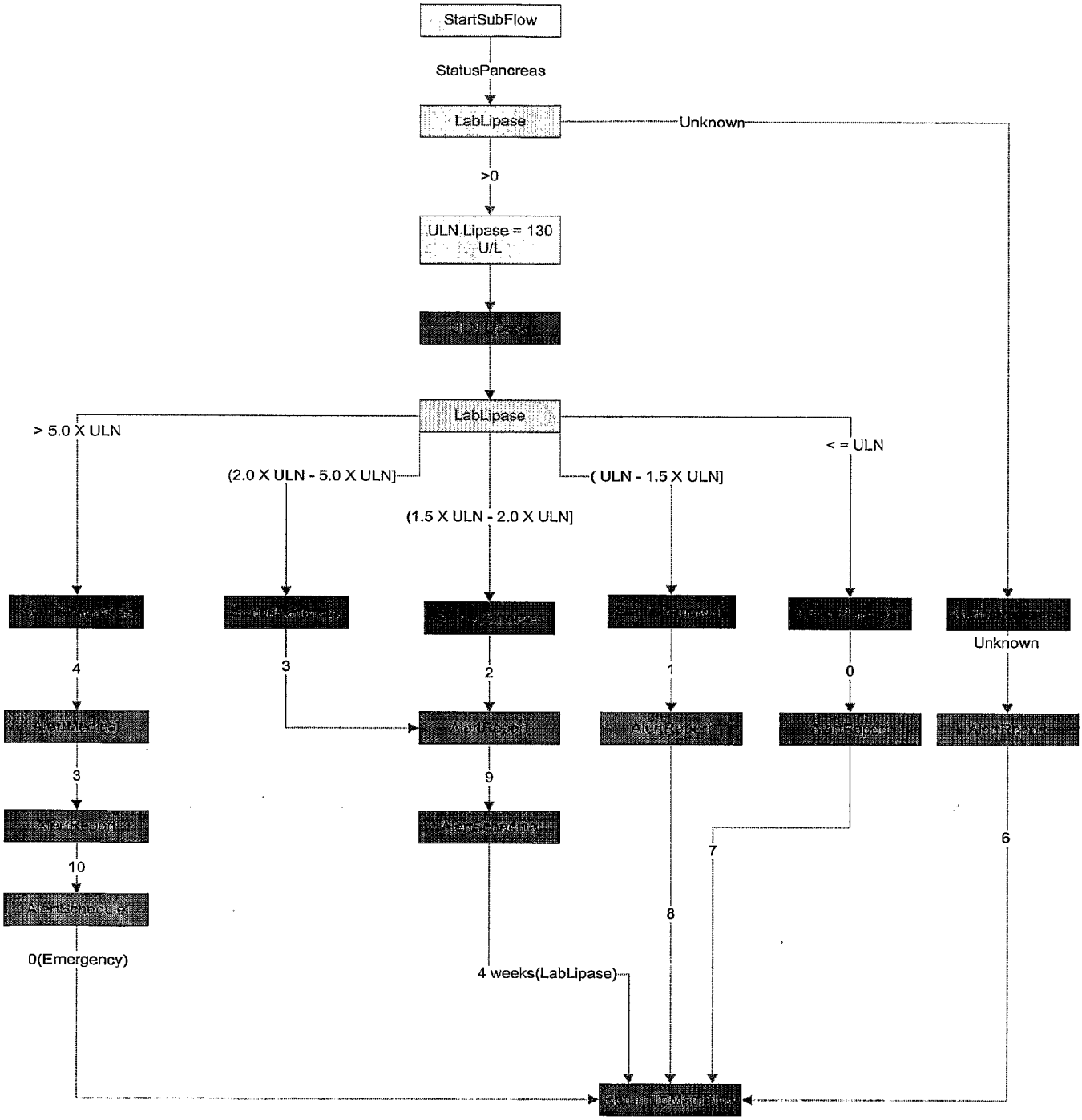

StartSubFlow
StatusPancreas
LabLipase
Unknown
>0
ULN Lipase = 130 U/L
LabLipase
> 5.0 X ULN
(2.0 X ULN - 5.0 X ULN]
(1.5 X ULN - 2.0 X ULN]
(ULN - 1.5 X ULN]
< = ULN
Unknown
4
3
2
1
0
3
9
10
0(Emergency)
4 weeks(LabLipase)
8
7
6

FIG. 31

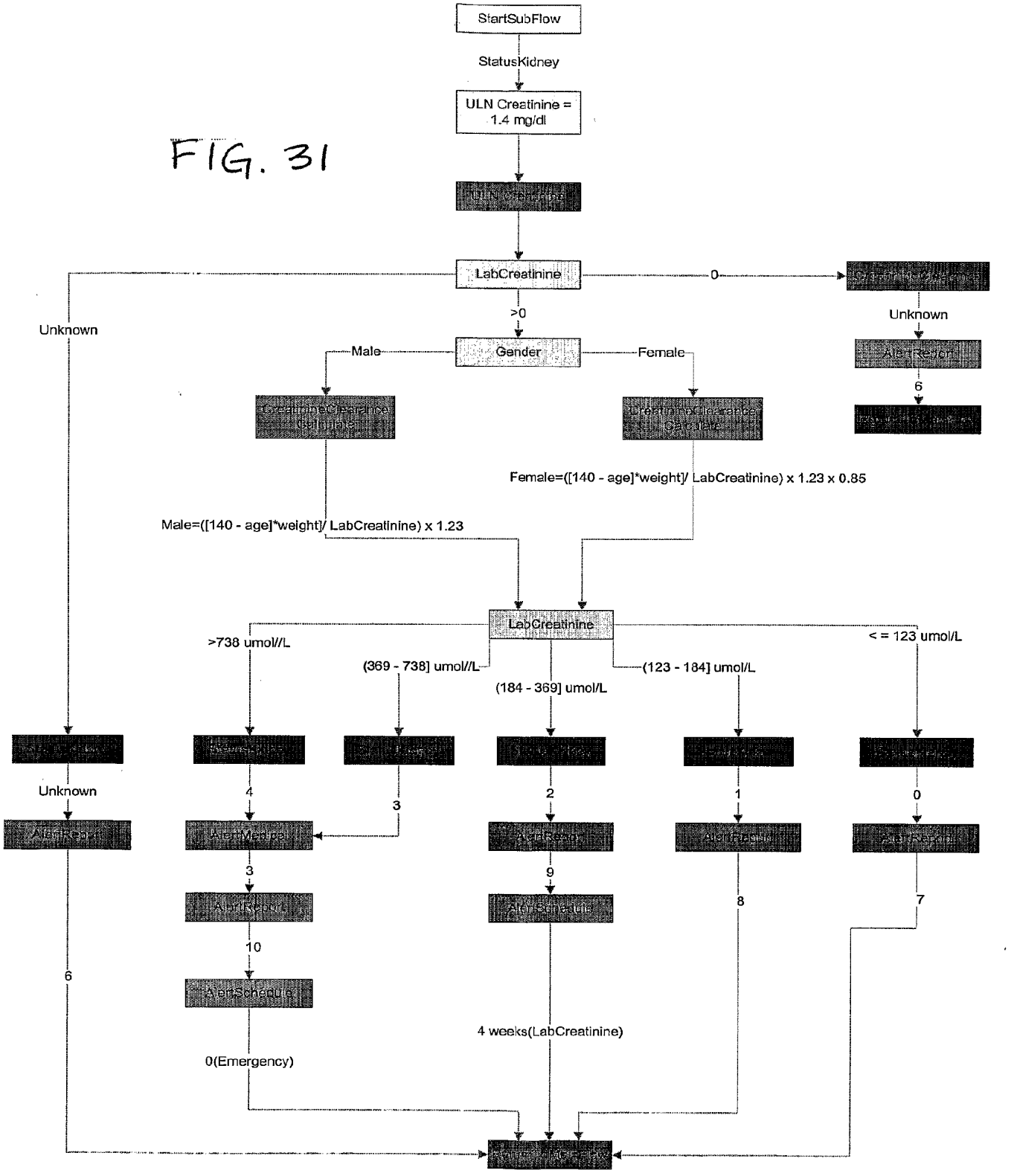

StartSubFlow
StatusKidney
ULN Creatinine = 1.4 mg/dl
LabCreatinine
0
Unknown
>0
Gender
Male
Female
Unknown
6
Female=([140 - age]*weight]/ LabCreatinine) x 1.23 x 0.85
Male=([140 - age]*weight]/ LabCreatinine) x 1.23
LabCreatinine
>738 umol//L
(369 - 738] umol//L
(184 - 369] umol/L
(123 - 184] umol/L
< = 123 umol/L
Unknown
4
3
2
1
0
3
9
8
7
10
6
4 weeks(LabCreatinine)
0(Emergency)

FIG. 32

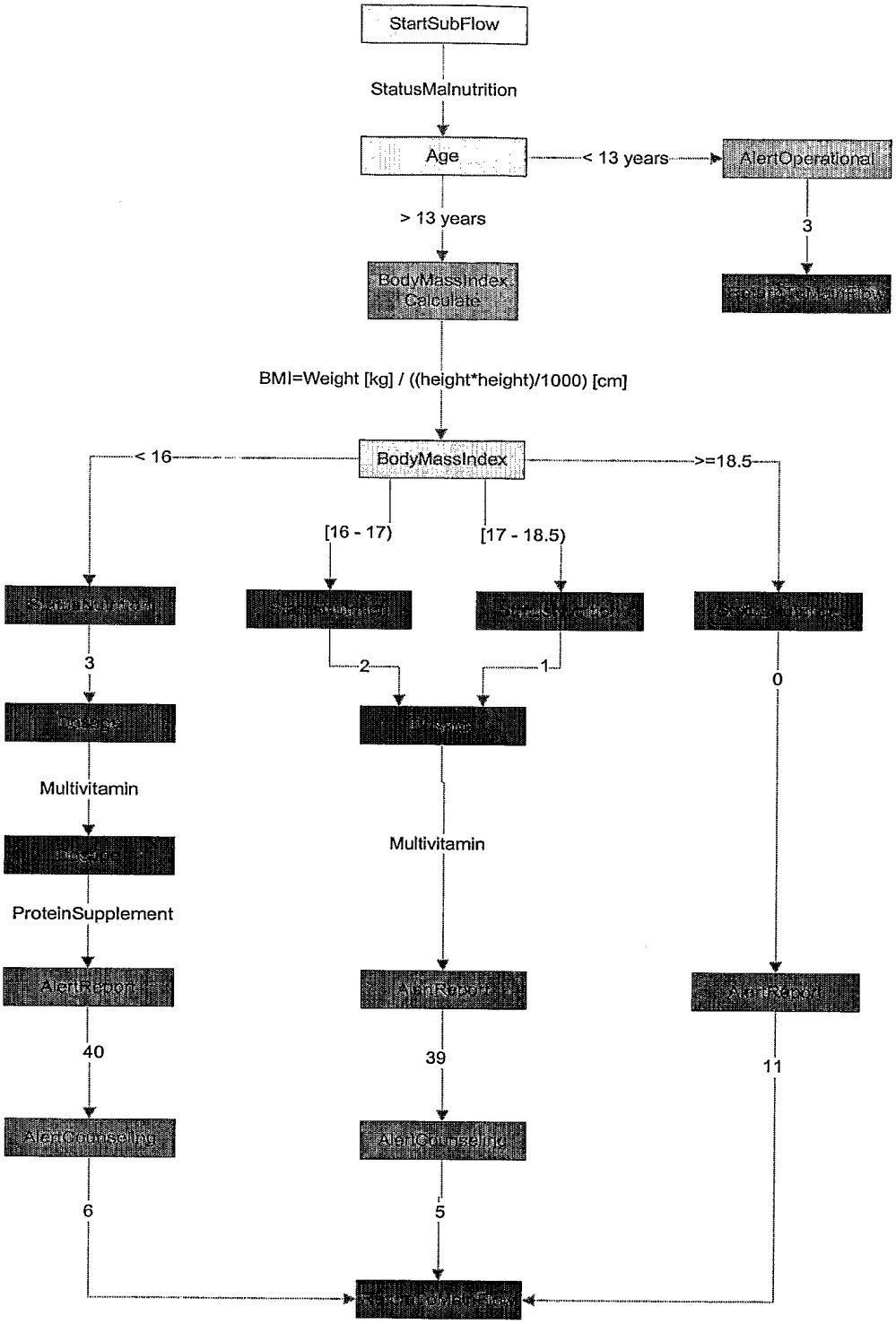

StartSubFlow
StatusMalnutrition
Age
< 13 years
AlertOperational
3
> 13 years
BodyMassIndex Calculate
BMI=Weight [kg] / ((height*height)/1000) [cm]
BodyMassIndex
< 16
[16 - 17)
[17 - 18.5)
>=18.5
3
2
1
0
Multivitamin
Multivitamin
ProteinSupplement
40
39
11
6
5

FIG. 33

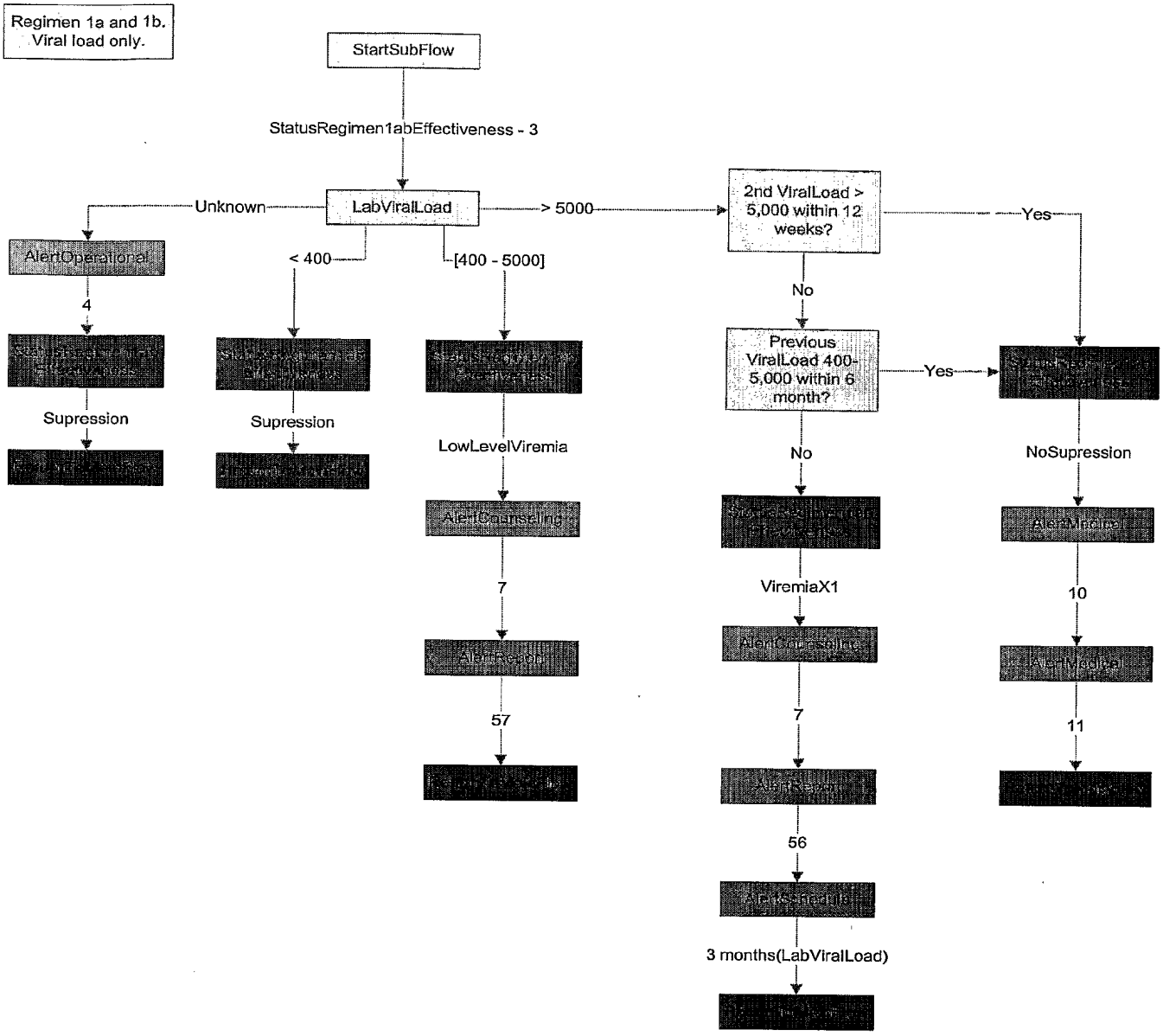

Regimen 1a and 1b. Viral load only.
StartSubFlow
StatusRegimen1abEffectiveness - 3
LabViralLoad
Unknown
< 400
[400 - 5000]
> 5000
AlertOperational
4
Supression
Supression
LowLevelViremia
AlertCounseling
7
57
2nd ViralLoad > 5,000 within 12 weeks?
Yes
No
Previous ViralLoad 400-5,000 within 6 month?
Yes
No
ViremiaX1
7
56
3 months(LabViralLoad)
NoSupression
10
11

FIG. 34

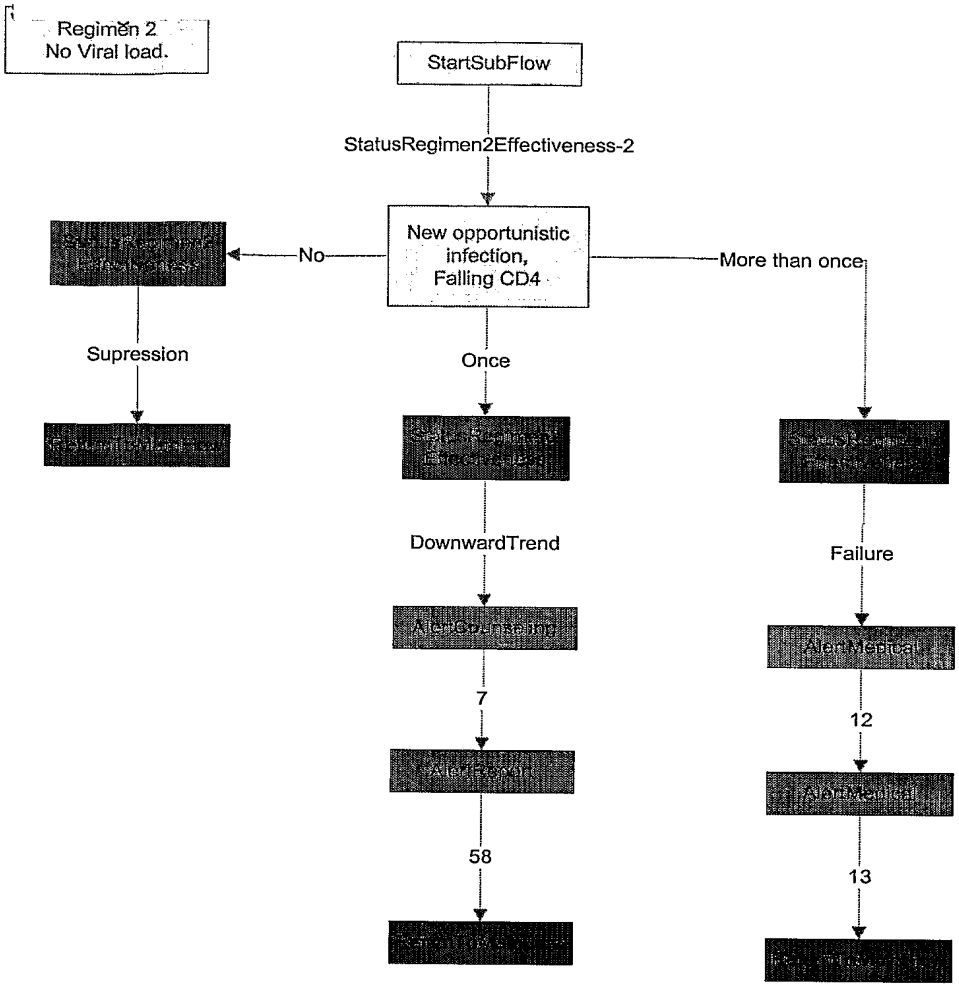

Regimen 2
No Viral load.
StartSubFlow
StatusRegimen2Effectiveness-2
New opportunistic infection, Falling CD4
No
More than once
Supression
Once
DownwardTrend
Failure
7
12
58
13

FIG. 35

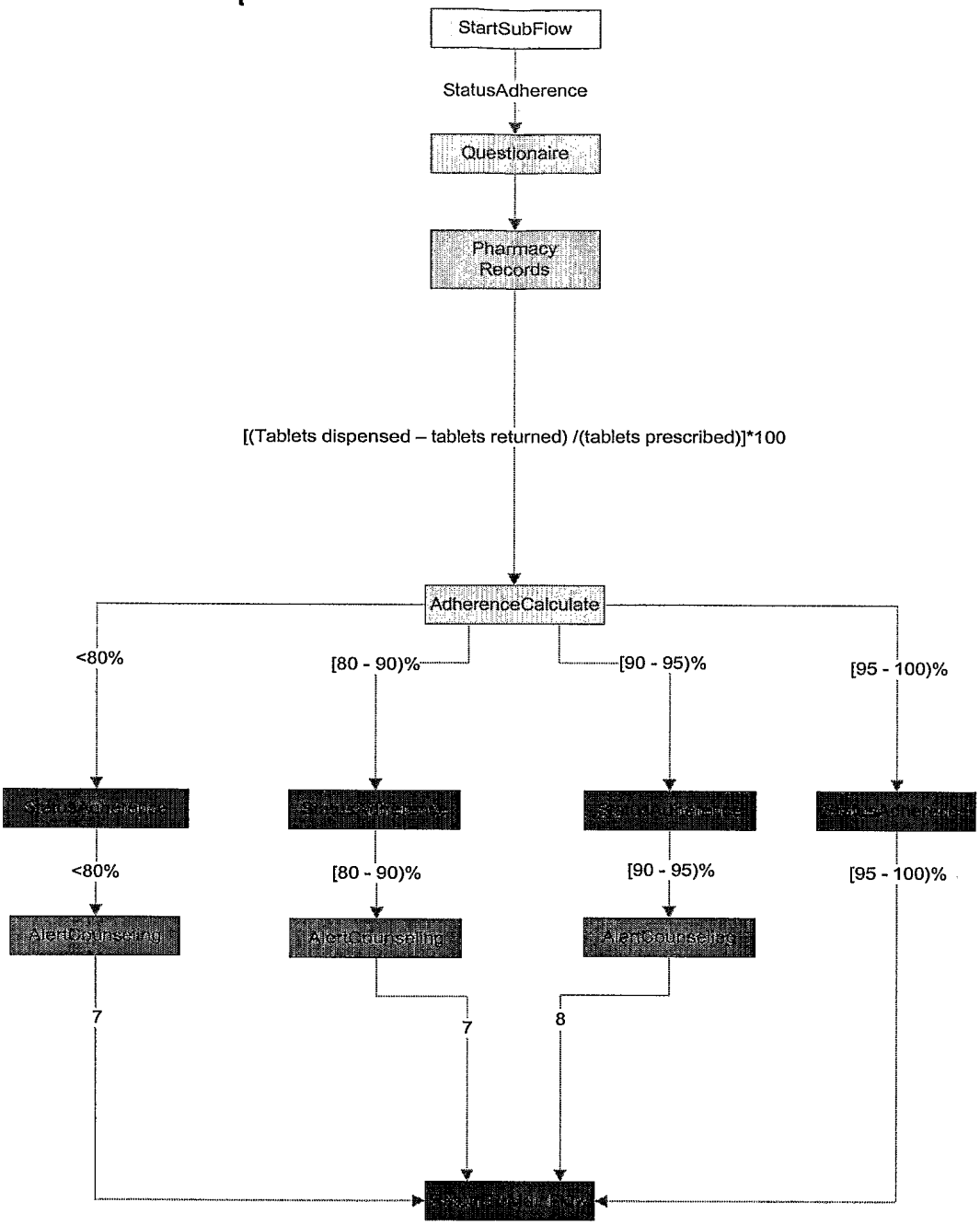

StartSubFlow
StatusAdherence
Questionaire
Pharmacy Records
[(Tablets dispensed – tablets returned) /(tablets prescribed)]*100
AdherenceCalculate
<80%
[80 - 90)%
[90 - 95)%
[95 - 100)%
<80%
[80 - 90)%
[90 - 95)%
[95 - 100)%
AlertCounseling
AlertCounseling
AlertCounseling
7
7
8

FIG 36

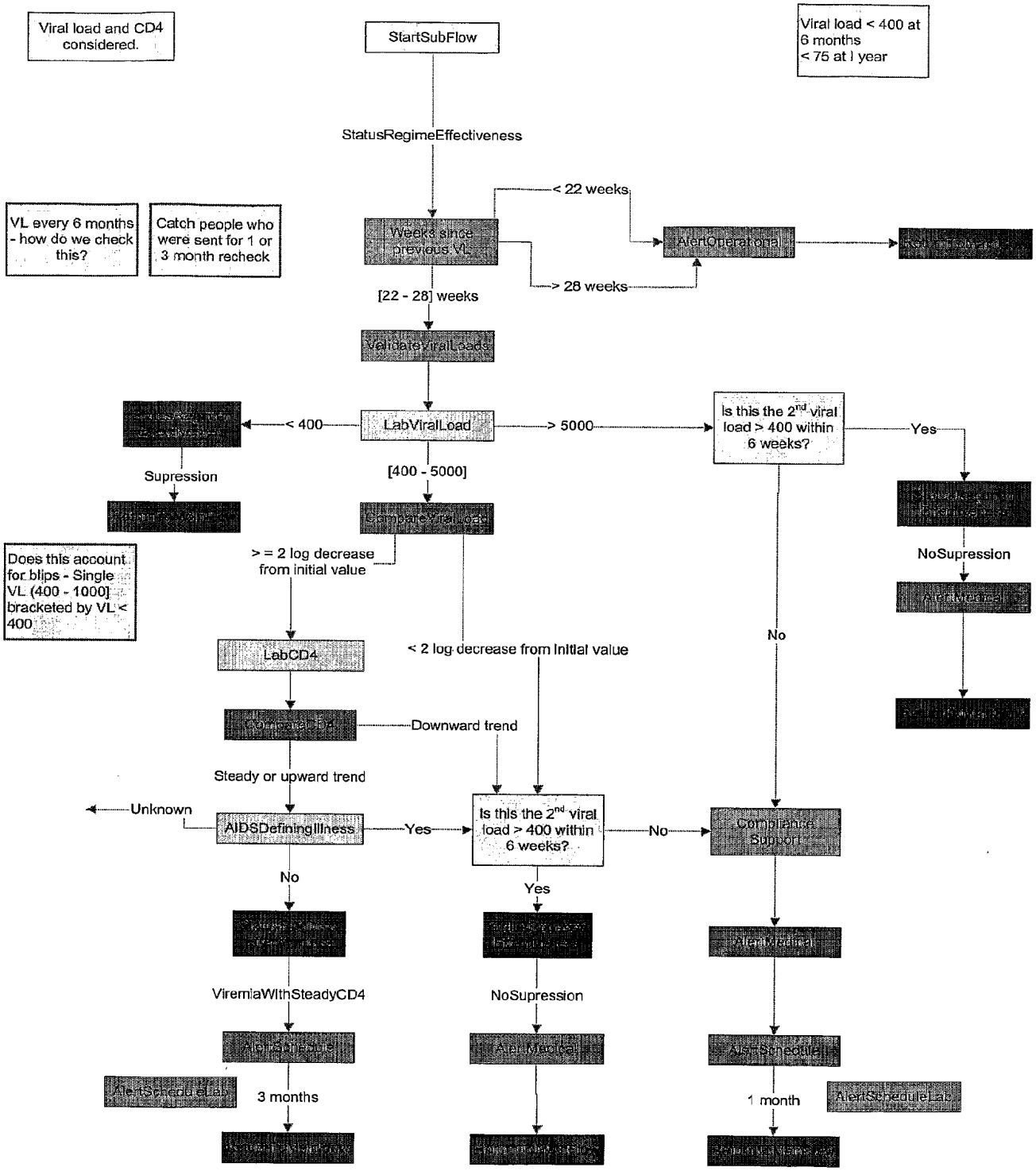

Viral load and CD4 considered.
StartSubFlow
Viral load < 400 at 6 months
< 75 at 1 year
StatusRegimeEffectiveness
VL every 6 months - how do we check this?
Catch people who were sent for 1 or 3 month recheck
< 22 weeks
Weeks since previous VL
AlertOperational
> 28 weeks
[22 - 28] weeks
ValidateViralLoads
< 400
LabViralLoad
> 5000
Is this the 2nd viral load > 400 within 6 weeks?
Yes
Supression
[400 - 5000]
NoSupression
Does this account for blips - Single VL (400 - 1000] bracketed by VL < 400
> = 2 log decrease from initial value
LabCD4
< 2 log decrease from initial value
No
Downward trend
Steady or upward trend
Unknown
AIDSDefiningIllness
Yes
Is this the 2nd viral load > 400 within 6 weeks?
No
Compliance Support
No
Yes
AlertMedical
ViremiaWithSteadyCD4
NoSupression
3 months
1 month

FIG. 37

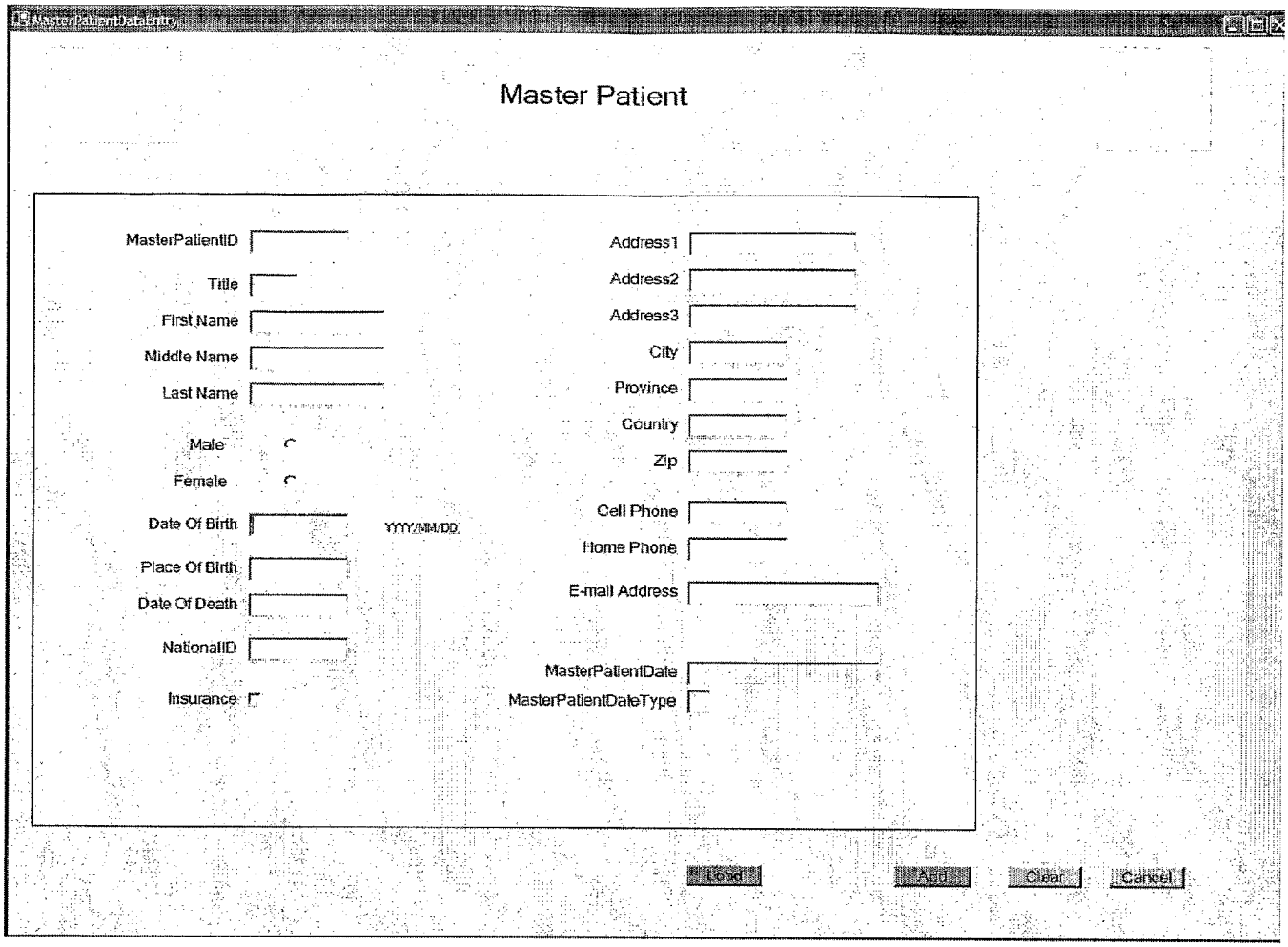

Master Patient
MasterPatientID
Title
First Name
Middle Name
Last Name
Male
Female
Date Of Birth
YYYY/MM/DD
Place Of Birth
Date Of Death
NationalID
Insurance
Address1
Address2
Address3
City
Province
Country
Zip
Cell Phone
Home Phone
E-mail Address
MasterPatientDate
MasterPatientDateType
Load
Add
Clear
Cancel

FIG. 38

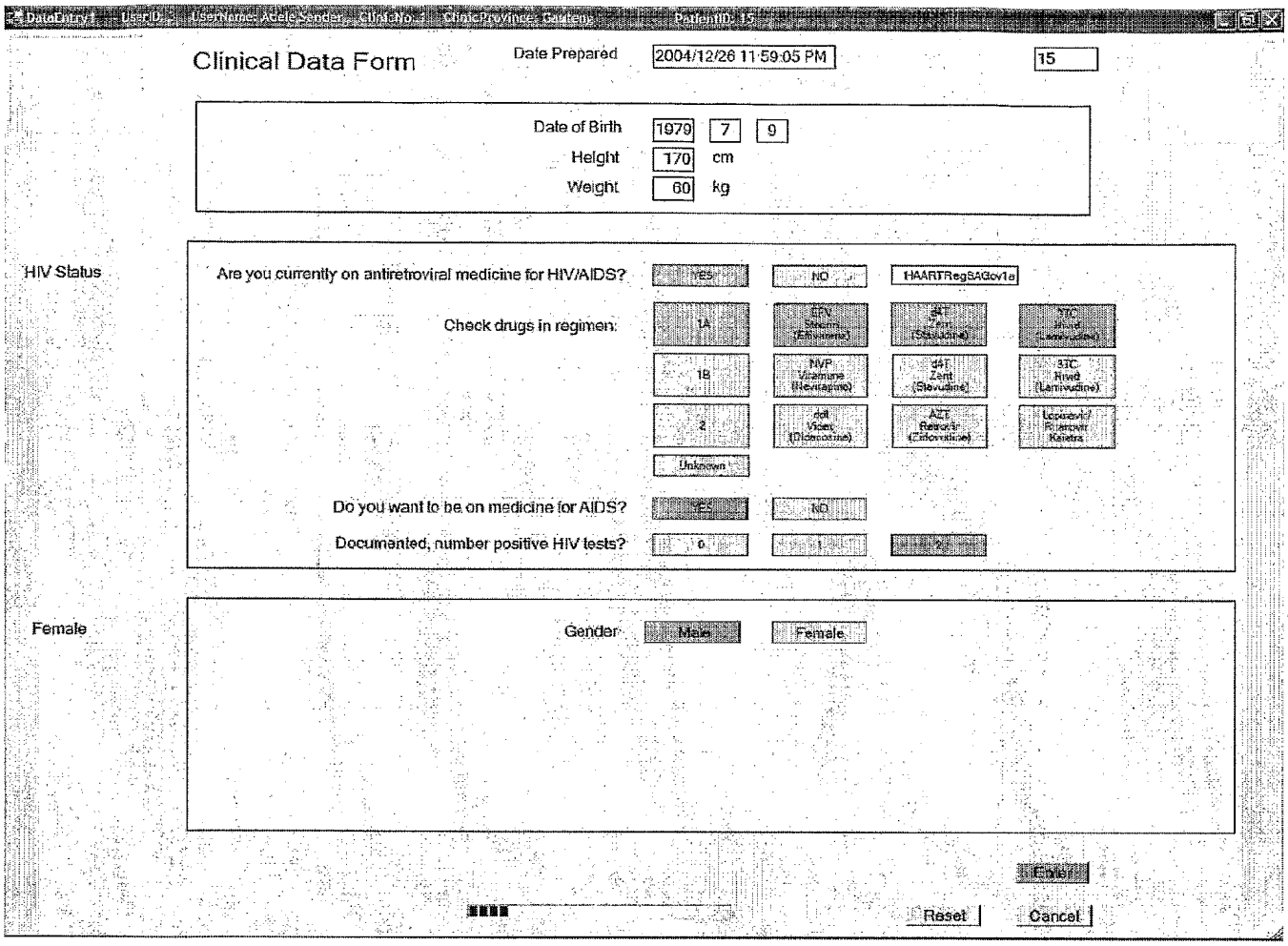

Clinical Data Form
Date Prepared
2004/12/26 11:59:05 PM
15
Date of Birth
1979
7
9
Height
170
cm
Weight
60
kg
HIV Status
Are you currently on antiretroviral medicine for HIV/AIDS?
YES
NO
HAARTRegSAGov1a
Check drugs in regimen:
1A
1B
2
Unknown
EFV Sustiva (Efavirenz)
NVP Viramune (Nevirapine)
ddI Videx (Didanosine)
d4T Zerit (Stavudine)
AZT Retrovir (Zidovudine)
3TC Hivid (Lamivudine)
Lopinavir/ Ritonavir Kaletra
Do you want to be on medicine for AIDS?
YES
NO
Documented, number positive HIV tests?
0
1
2
Female
Gender
Male
Female
Enter
Reset
Cancel

FIG. 39

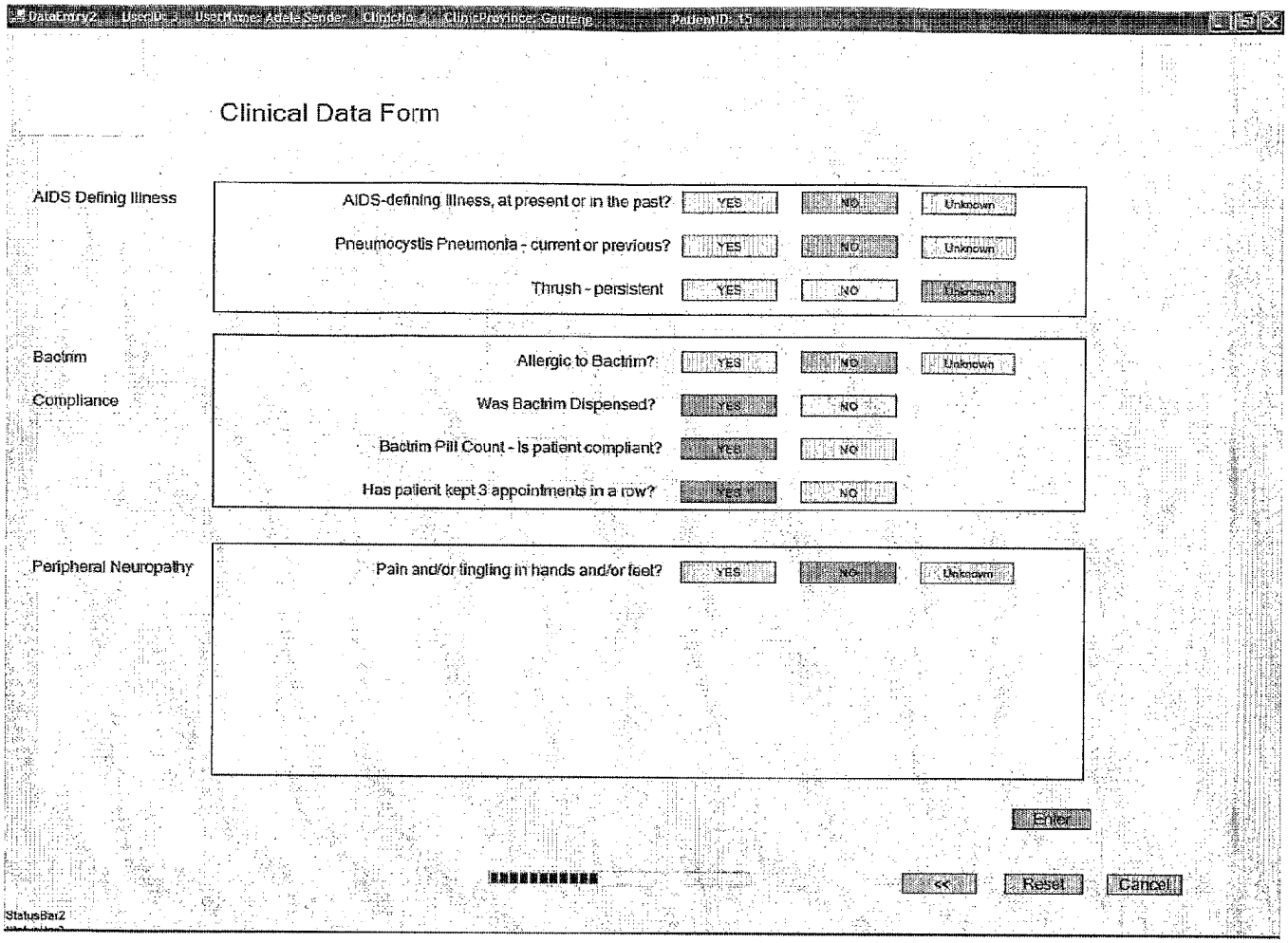

DataEntry2
PatientID: 15
Clinical Data Form
AIDS Definig Illness
AIDS-defining illness, at present or in the past?
YES
NO
Unknown
Pneumocystis Pneumonia - current or previous?
YES
NO
Unknown
Thrush - persistent
YES
NO
Unknown
Bactrim
Compliance
Allergic to Bactrim?
YES
NO
Unknown
Was Bactrim Dispensed?
YES
NO
Bactrim Pill Count - Is patient compliant?
YES
NO
Has patient kept 3 appointments in a row?
YES
NO
Peripheral Neuropathy
Pain and/or tingling in hands and/or feet?
YES
NO
Unknown
Enter
<<
Reset
Cancel
StatusBar2

FIG. 40

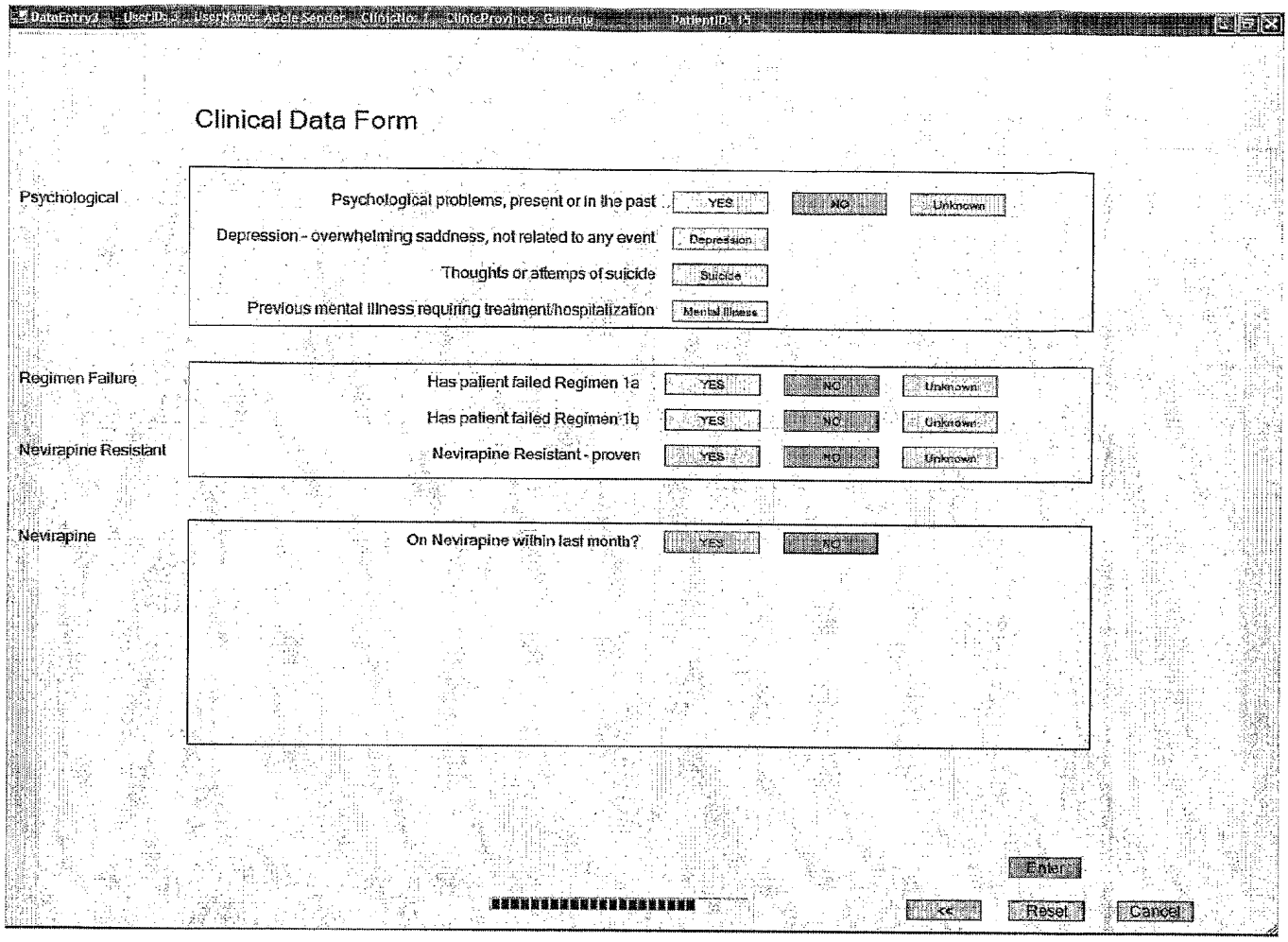

Clinical Data Form
Psychological
Psychological problems, present or in the past
YES
NO
Unknown
Depression - overwhelming saddness, not related to any event
Depression
Thoughts or attemps of suicide
Suicide
Previous mental illness requiring treatment/hospitalization
Mental Illness
Regimen Failure
Has patient failed Regimen 1a
YES
NO
Unknown
Has patient failed Regimen 1b
YES
NO
Unknown
Nevirapine Resistant
Nevirapine Resistant - proven
YES
NO
Unknown
Nevirapine
On Nevirapine within last month?
YES
NO
Enter
<<
Reset
Cancel

FIG. 41

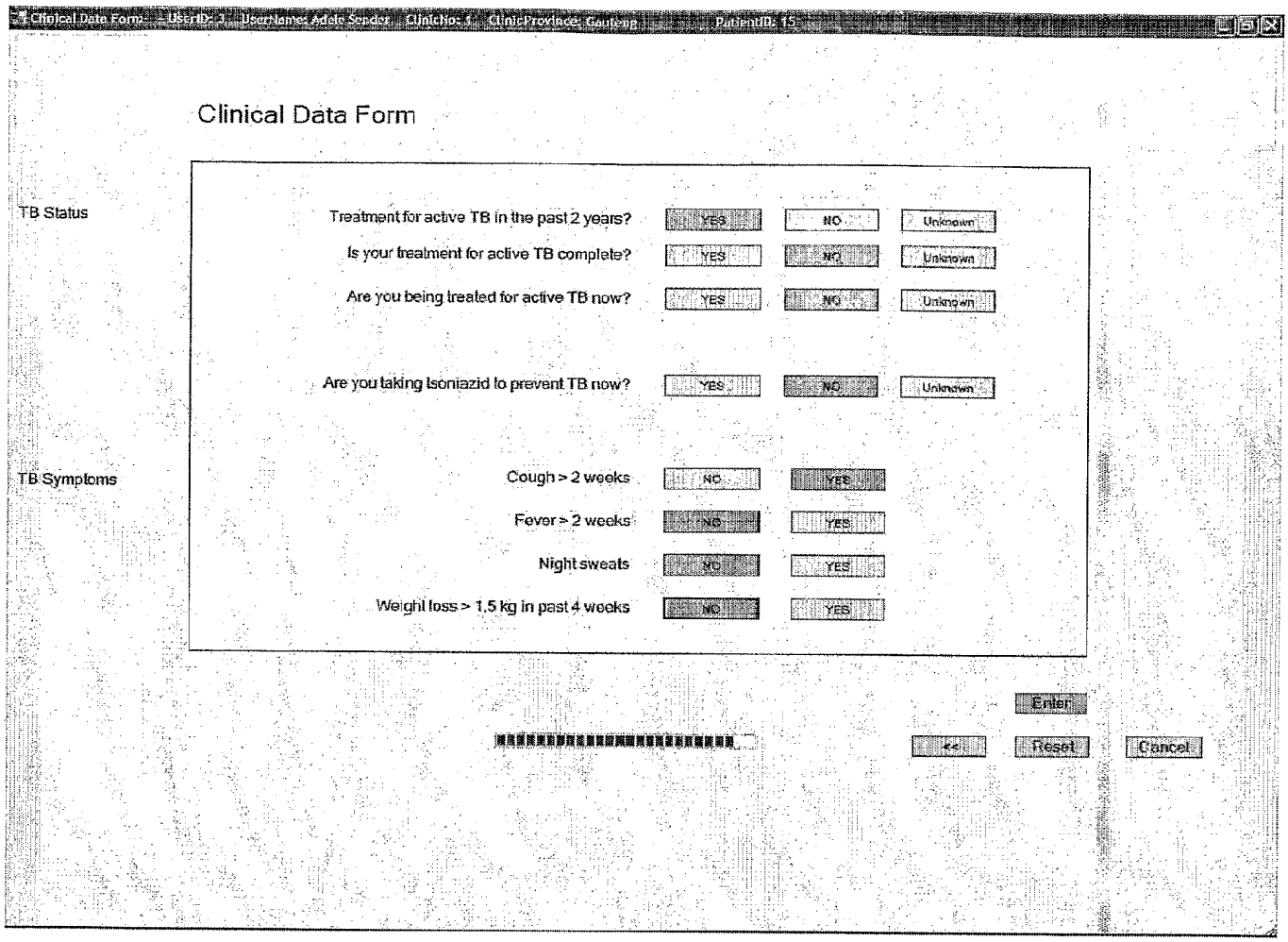

Clinical Data Form
TB Status
Treatment for active TB in the past 2 years?
YES
NO
Unknown
Is your treatment for active TB complete?
YES
NO
Unknown
Are you being treated for active TB now?
YES
NO
Unknown
Are you taking Isoniazid to prevent TB now?
YES
NO
Unknown
TB Symptoms
Cough > 2 weeks
NO
YES
Fever > 2 weeks
NO
YES
Night sweats
NO
YES
Weight loss > 1.5 kg in past 4 weeks
NO
YES
Enter
<<
Reset
Cancel

FIG. 42

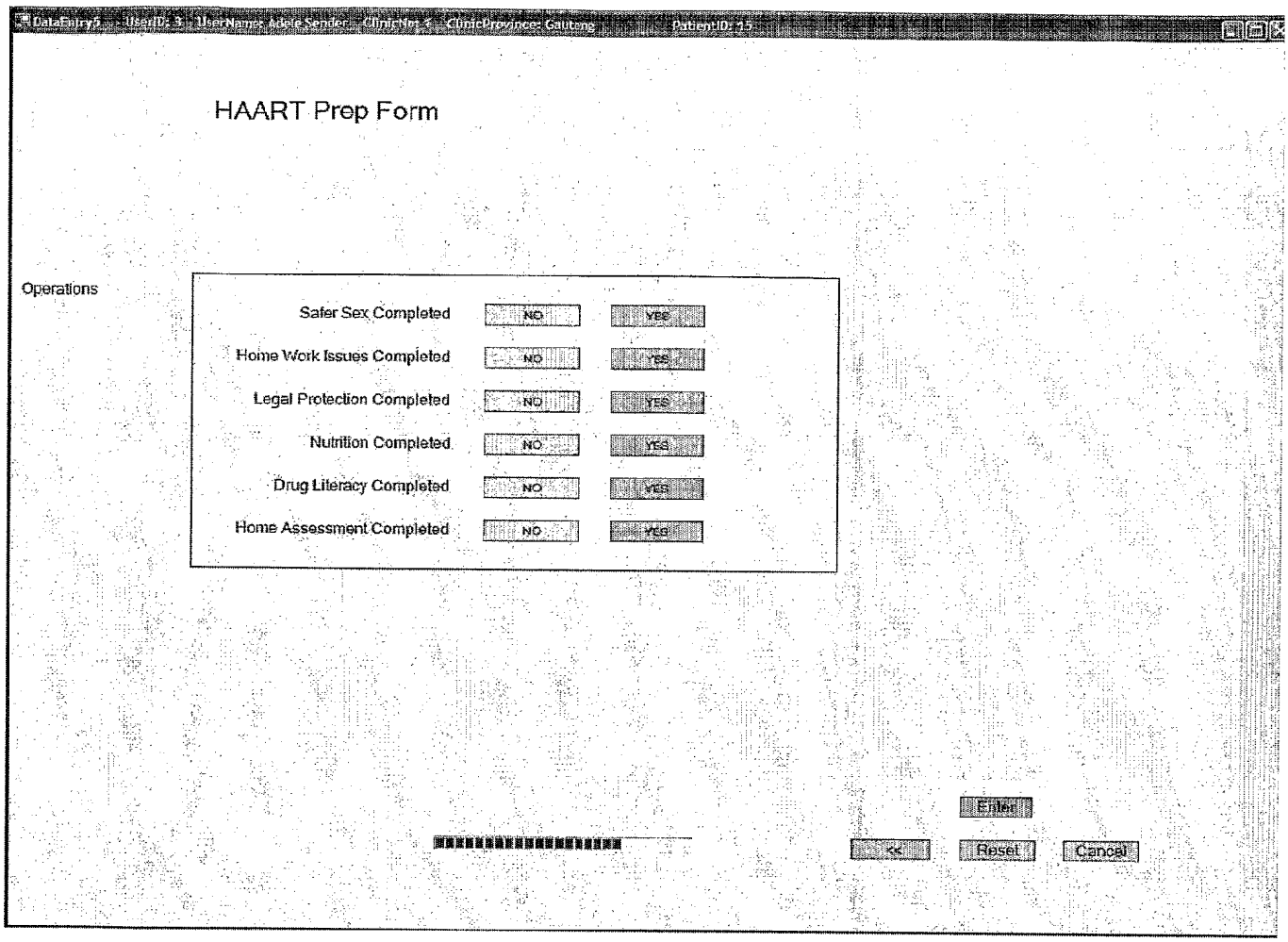

DataEntry5 - UserID: 3 - UserName: Adele Sendor - ClinicNo: 4 - ClinicProvince: Gauteng - PatientID: 15
HAART Prep Form
Operations
Safer Sex Completed
NO
YES
Home Work Issues Completed
NO
YES
Legal Protection Completed
NO
YES
Nutrition Completed
NO
YES
Drug Literacy Completed
NO
YES
Home Assessment Completed
NO
YES
Enter
<<
Reset
Cancel

FIG. 43

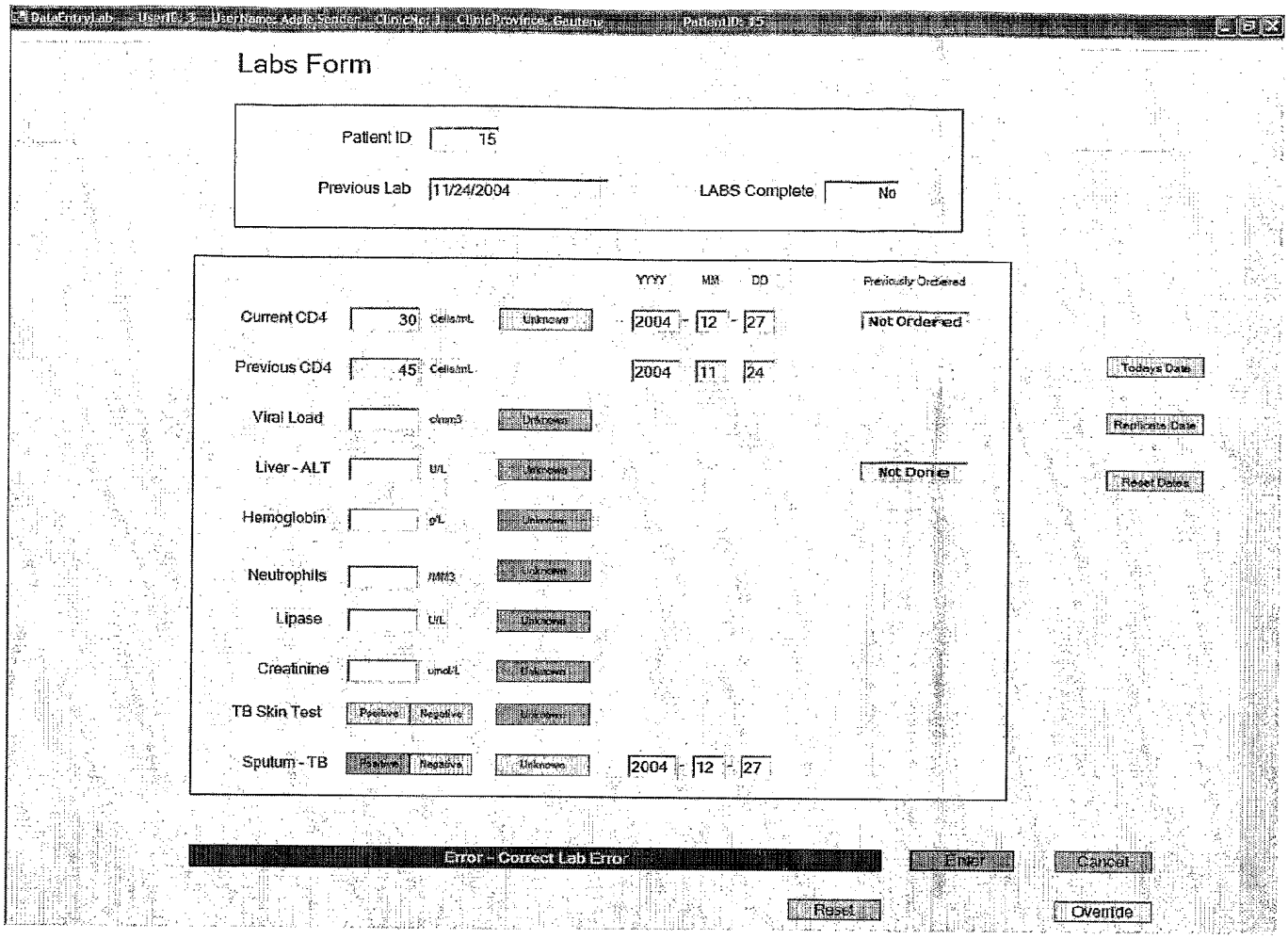

Labs Form
Patient ID 15
Previous Lab 11/24/2004
LABS Complete No
YYYY MM DD
Previously Ordered
Current CD4 30 Cells/mL Unknown 2004 - 12 - 27 Not Ordered
Previous CD4 45 Cells/mL 2004 11 24
Viral Load cl/cm3 Unknown
Liver - ALT U/L Unknown Not Done
Hemoglobin g/L Unknown
Neutrophils /MM3 Unknown
Lipase U/L Unknown
Creatinine umol/L Unknown
TB Skin Test Positive Negative Unknown
Sputum - TB Positive Negative Unknown 2004 - 12 - 27
Todays Date
Replicate Date
Reset Dates
Error - Correct Lab Error
Enter
Cancel
Reset
Override

FIG. 44

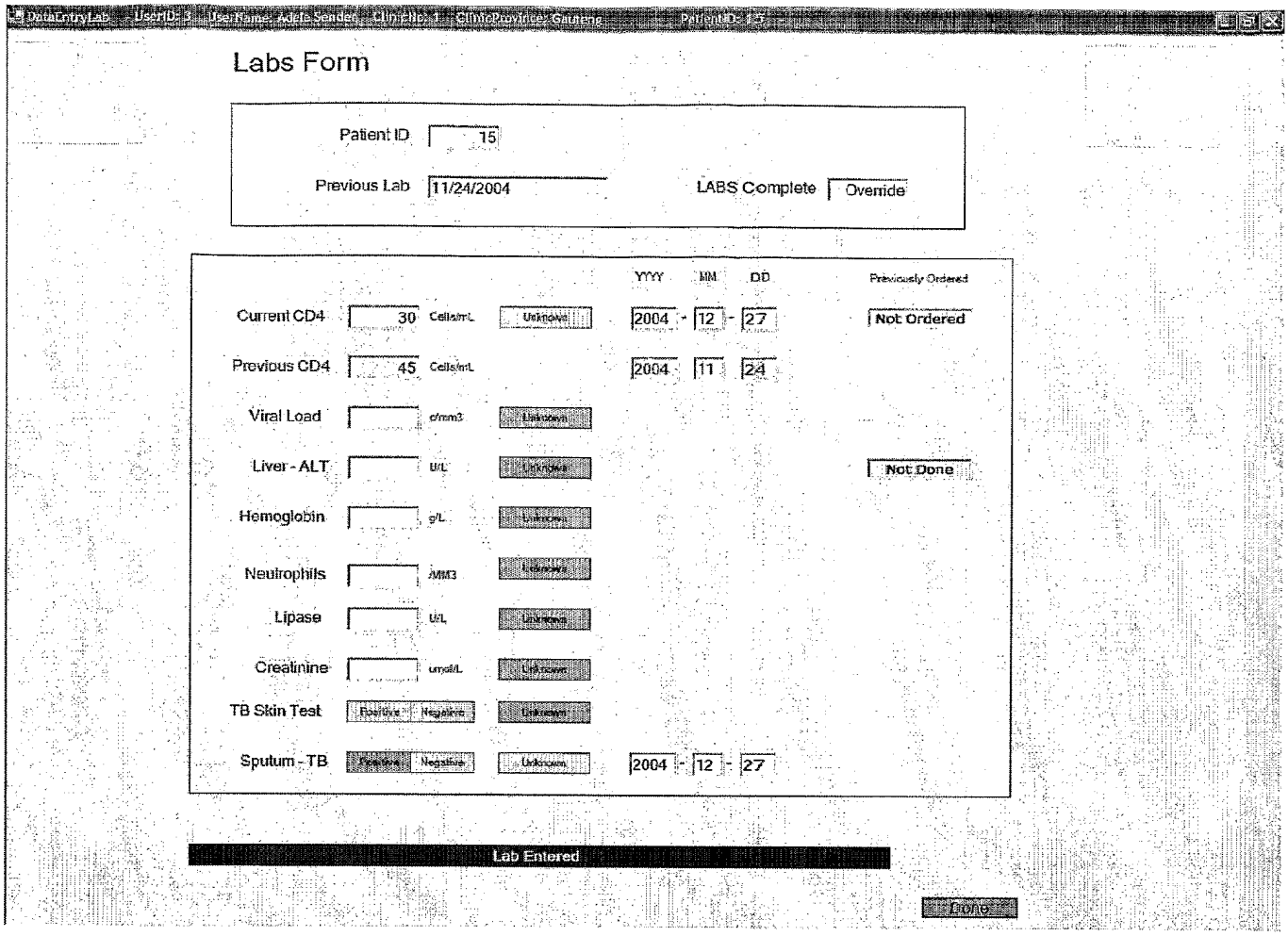

Labs Form
Patient ID
15
Previous Lab
11/24/2004
LABS Complete
Override
YYYY
MM
DD
Previously Ordered
Current CD4
30
Cells/mL
Unknown
2004
12
27
Not Ordered
Previous CD4
45
Cells/mL
2004
11
24
Viral Load
c/mm3
Unknown
Liver - ALT
U/L
Unknown
Not Done
Hemoglobin
g/L
Unknown
Neutrophils
/MM3
Unknown
Lipase
U/L
Unknown
Creatinine
umol/L
Unknown
TB Skin Test
Positive
Negative
Unknown
Sputum - TB
Positive
Negative
Unknown
2004
12
27
Lab Entered
Done

FIG. 45

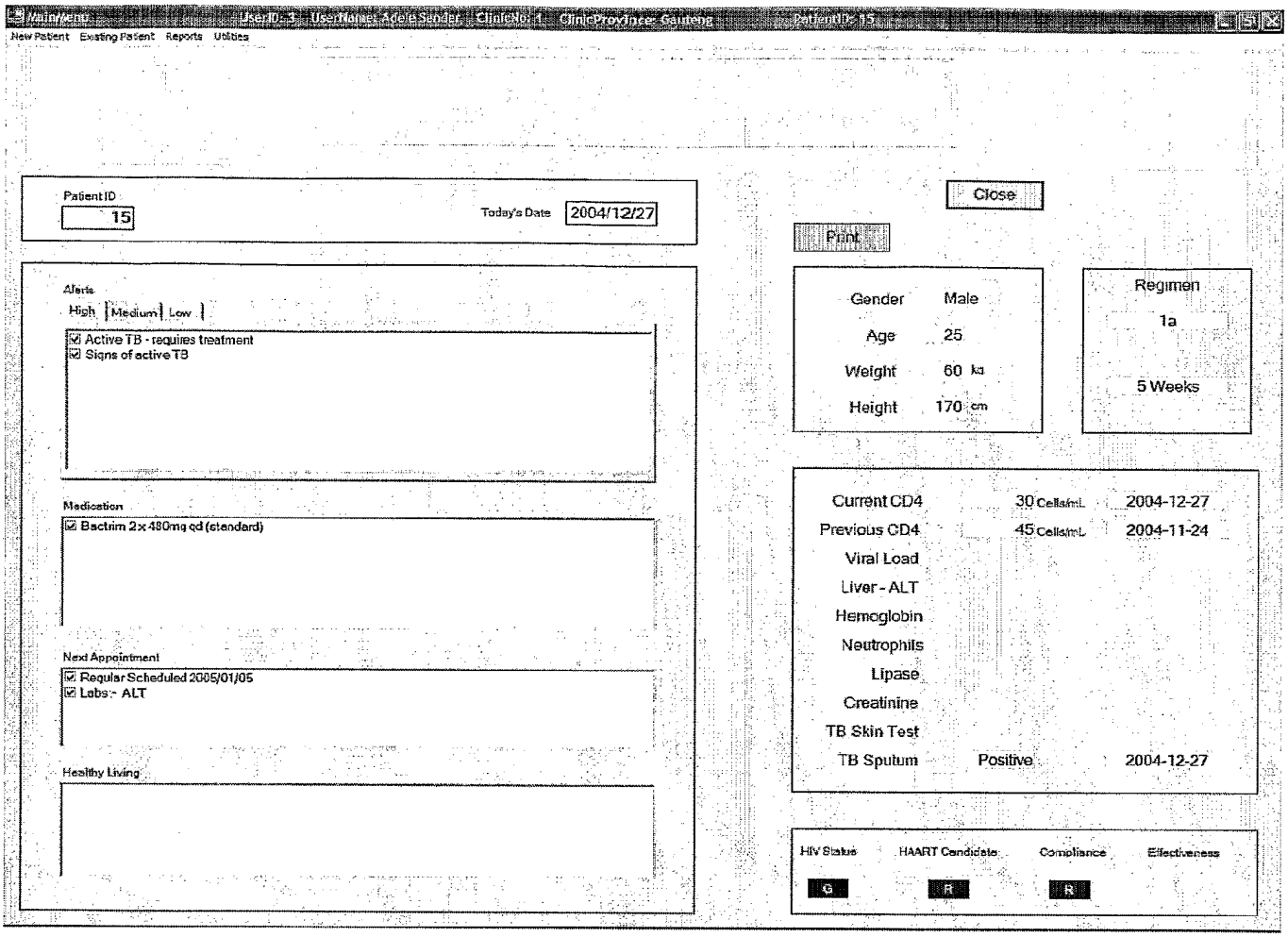

Main Menu
New Patient
Existing Patient
Reports
Utilities
Patient ID
15
Today's Date
2004/12/27
Close
Print
Alerts
High
Medium
Low
Active TB - requires treatment
Signs of active TB
Medication
Bactrim 2x 480mg qd (standard)
Next Appointment
Regular Scheduled 2005/01/05
Labs:- ALT
Healthy Living
Gender
Male
Age
25
Weight
60 kg
Height
170 cm
Regimen
1a
5 Weeks
Current CD4
30 Cells/mL
2004-12-27
Previous CD4
45 Cells/mL
2004-11-24
Viral Load
Liver - ALT
Hemoglobin
Neutrophils
Lipase
Creatinine
TB Skin Test
TB Sputum
Positive
2004-12-27
HIV Status
HAART Candidate
Compliance
Effectiveness
G
R
R

FIG. 46

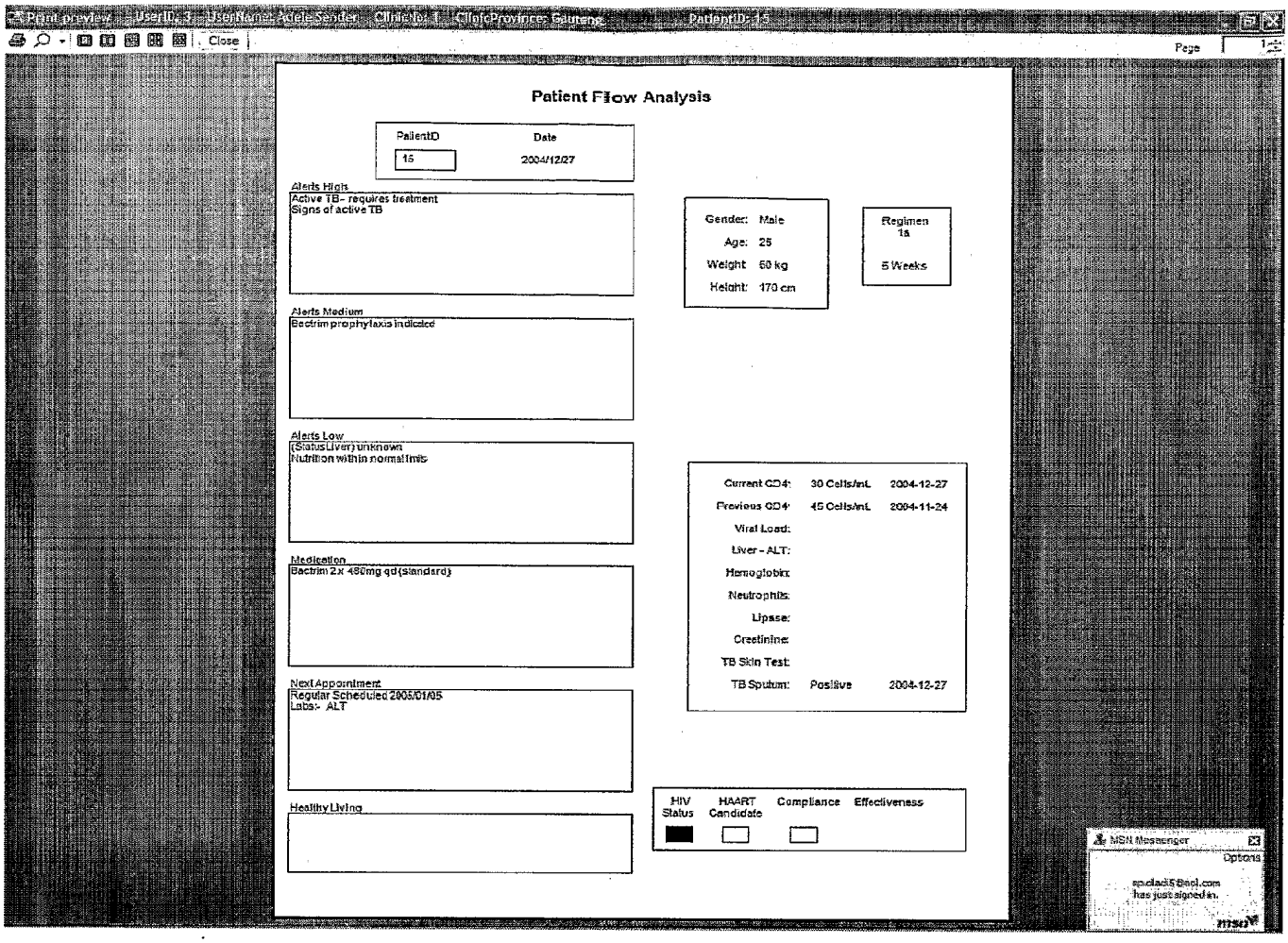

Print preview
UserID: 1
UserName: Adele Snyder
CliNicID: 1
ClinicProvince: Gauteng
PatientID: 15
Close
Page
Patient Flow Analysis
PatientID
15
Date
2004/12/27
Alerts High
Active TB- requires treatment
Signs of active TB
Alerts Medium
Bactrim prophylaxis indicated
Alerts Low
(Status Liver) unknown
Nutrition within normal limits
Medication
Bactrim 2x 480mg qd (standard)
Next Appointment
Regular Scheduled 2005/01/05
Labs:- ALT
Healthy Living
Gender: Male
Age: 25
Weight 60 kg
Height: 170 cm
Regimen
1a
5 Weeks
Current CD4: 30 Cells/mL 2004-12-27
Previous CD4: 45 Cells/mL 2004-11-24
Viral Load:
Liver - ALT:
Hemoglobin:
Neutrophils:
Lipase:
Creatinine:
TB Skin Test:
TB Sputum: Positive 2004-12-27
HIV Status
HAART Candidate
Compliance
Effectiveness
MSN Messenger
Options
has just signed in.

FIG. 47

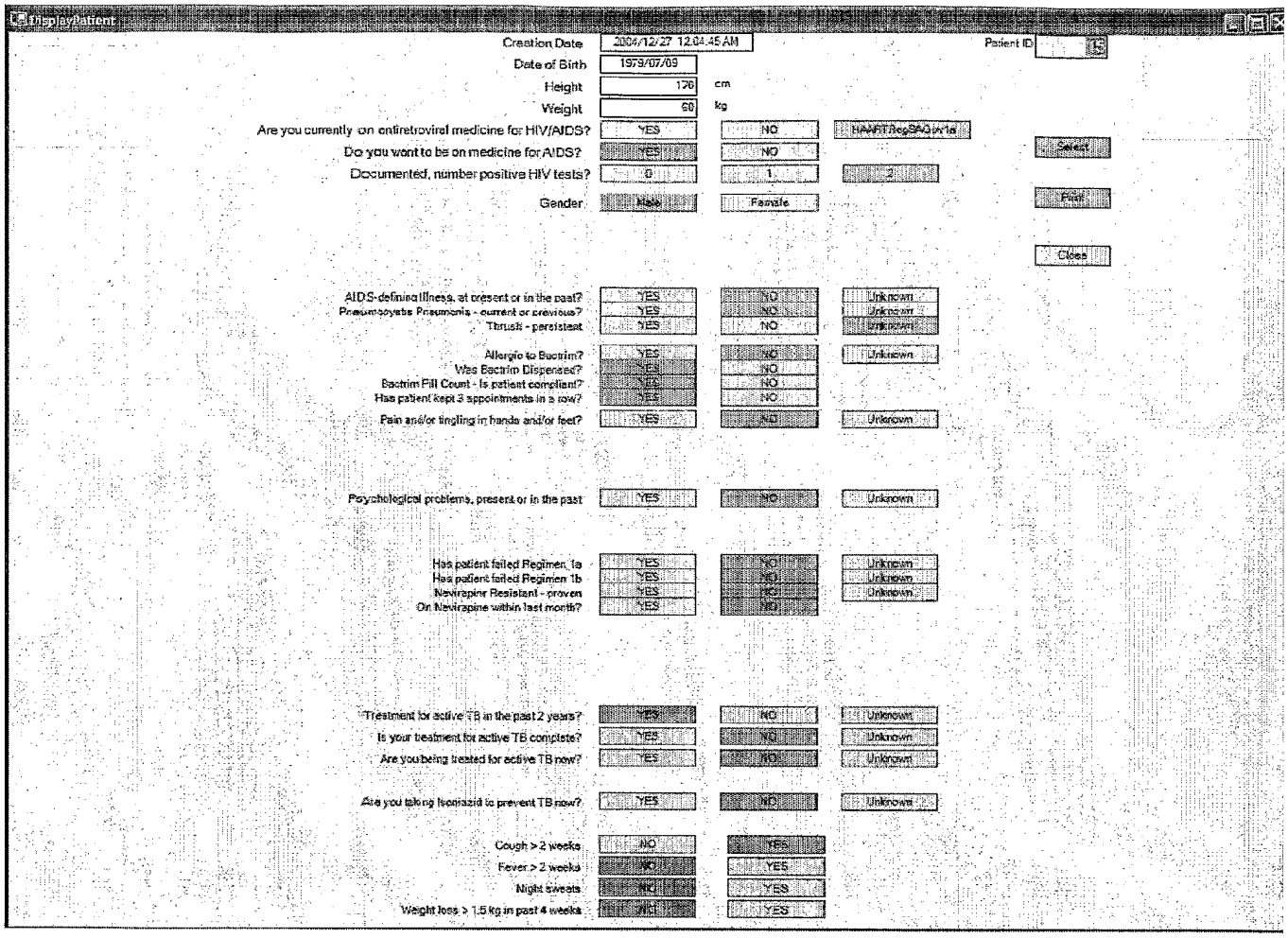

frmDisplayPatient
Creation Date
2004/12/27 12:04:45 AM
Patient ID
15
Date of Birth
1979/07/09
Height
176
cm
Weight
60
kg
Are you currently on antiretroviral medicine for HIV/AIDS?
YES
NO
HAART Reg 5A Gen 1a
Do you want to be on medicine for AIDS?
YES
NO
Select
Documented, number positive HIV tests?
0
1
2
Gender
Male
Female
Print
Close
AIDS-defining Illness, at present or in the past?
Pneumocystis Pneumonia - current or previous?
Thrush - persistent
Allergic to Bactrim?
Was Bactrim Dispensed?
Bactrim Pill Count - Is patient compliant?
Has patient kept 3 appointments in a row?
Pain and/or tingling in hands and/or feet?
Psychological problems, present or in the past
Has patient failed Regimen 1a
Has patient failed Regimen 1b
Nevirapine Resistant - proven
On Nevirapine within last month?
Treatment for active TB in the past 2 years?
Is your treatment for active TB complete?
Are you being treated for active TB now?
Are you taking Isoniazid to prevent TB now?
Unknown
Cough > 2 weeks
Fever > 2 weeks
Night sweats
Weight loss > 1.5 kg in past 4 weeks

FIG. 48

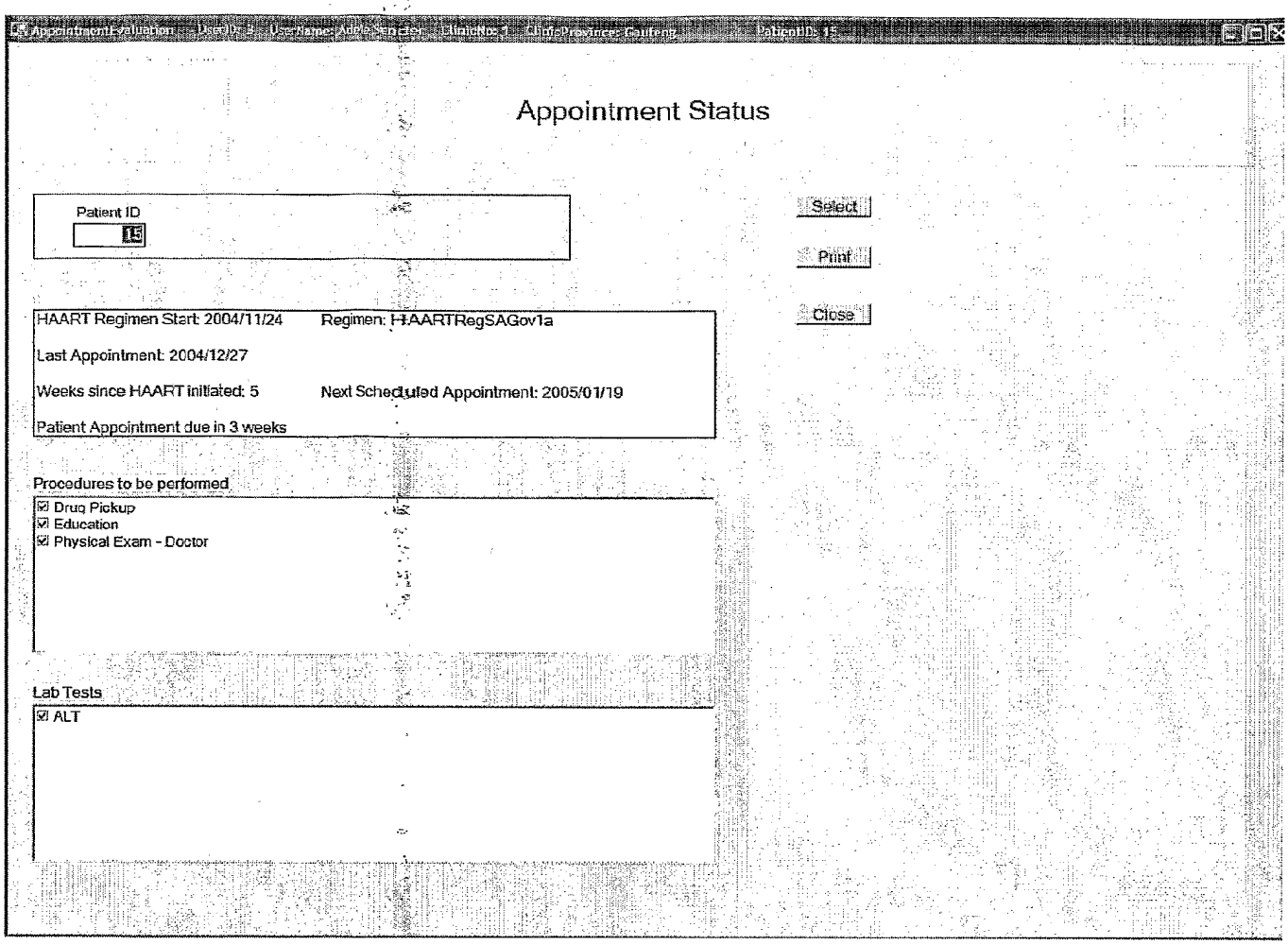

Appointment Status
Patient ID
Select
Print
Close
HAART Regimen Start: 2004/11/24
Regimen: HAARTRegSAGov1a
Last Appointment: 2004/12/27
Weeks since HAART initiated: 5
Next Scheduled Appointment: 2005/01/19
Patient Appointment due in 3 weeks
Procedures to be performed
Drug Pickup
Education
Physical Exam - Doctor
Lab Tests
ALT

FIG. 49

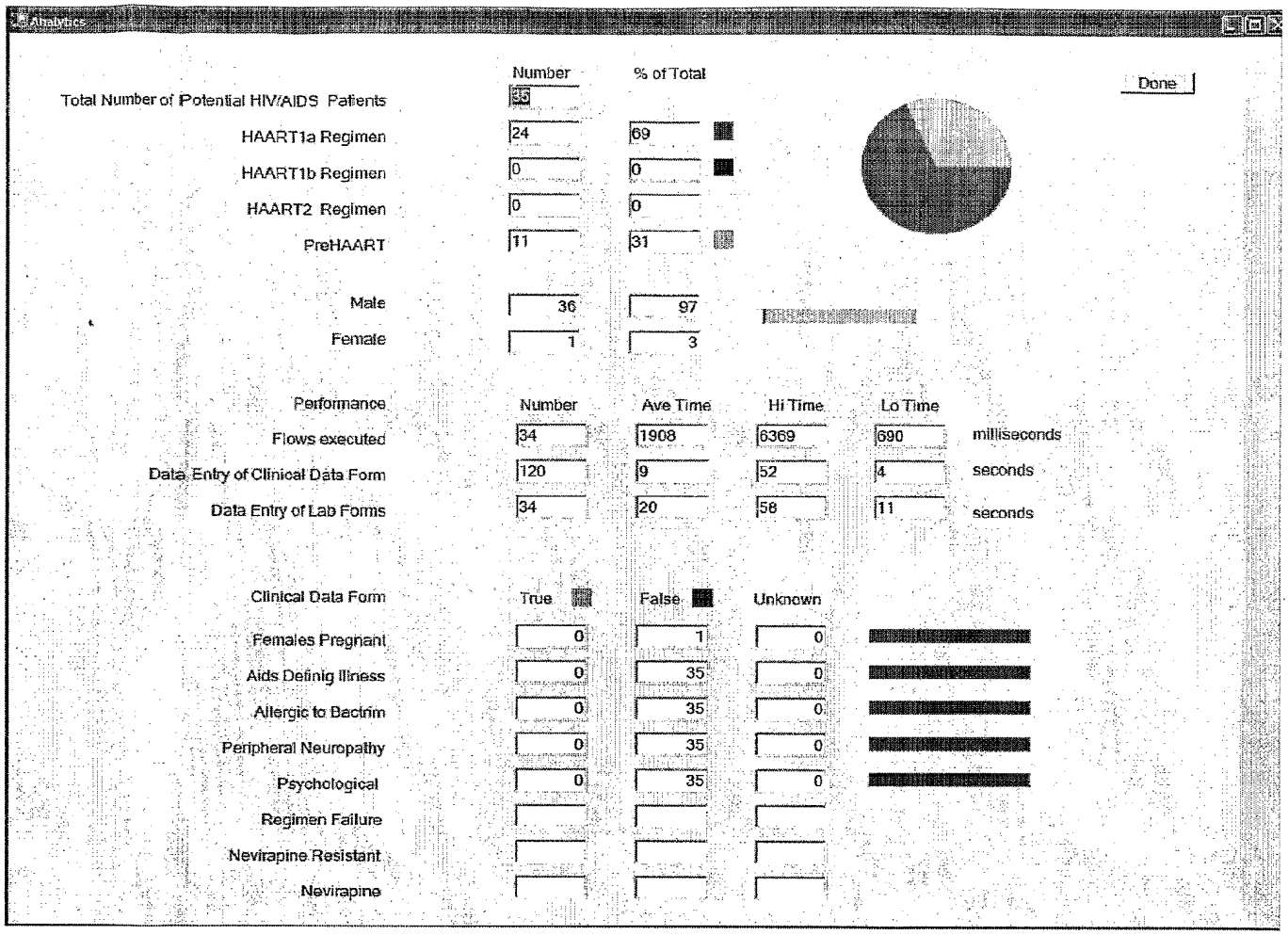
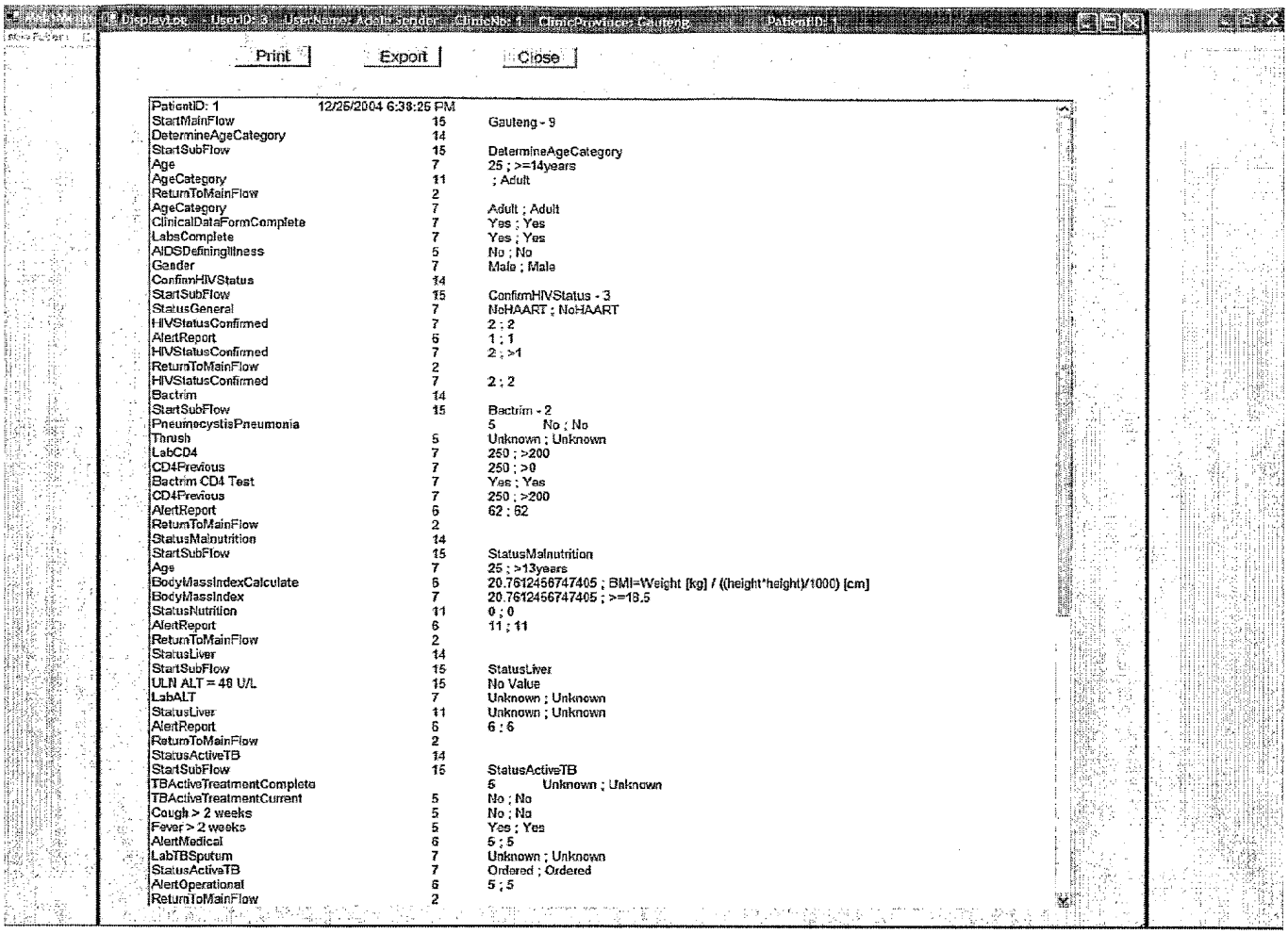

Ahabytics
Done
Number
% of Total
Total Number of Potential HIV/AIDS Patients
35
HAART1a Regimen
24
69
HAART1b Regimen
0
0
HAART2 Regimen
0
0
PreHAART
11
31
Male
36
97
Female
1
3
Performance
Number
Ave Time
Hi Time
Lo Time
Flows executed
34
1908
6369
690
milliseconds
Data Entry of Clinical Data Form
120
9
52
4
seconds
Data Entry of Lab Forms
34
20
58
11
seconds
Clinical Data Form
True
False
Unknown
Females Pregnant
0
1
0
Aids Definig Illness
0
35
0
Allergic to Bactrim
0
35
0
Peripheral Neuropathy
0
35
0
Psychological
0
35
0
Regimen Failure
Nevirapine Resistant
Nevirapine

FIG. 50


DisplayLog UserID: 3 UserName: Adults Gender ClinicNo: 1 ClinicProvince: Gauteng PatientID: 1
Print
Export
Close
PatientID: 1 12/25/2004 6:38:25 PM
StartMainFlow 15 Gauteng - 9
DetermineAgeCategory 14
StartSubFlow 15 DetermineAgeCategory
Age 7 25 ; >=14years
AgeCategory 11 ; Adult
ReturnToMainFlow 2
AgeCategory 7 Adult ; Adult
ClinicalDataFormComplete 7 Yes ; Yes
LabsComplete 7 Yes ; Yes
AIDSDefiningIllness 5 No ; No
Gender 7 Male ; Male
ConfirmHIVStatus 14
StartSubFlow 15 ConfirmHIVStatus - 3
StatusGeneral 7 NoHAART ; NoHAART
HIVStatusConfirmed 7 2 ; 2
AlertReport 6 1 ; 1
HIVStatusConfirmed 7 2 ; >1
ReturnToMainFlow 2
HIVStatusConfirmed 7 2 ; 2
Bactrim 14
StartSubFlow 15 Bactrim - 2
PneumocystisPneumonia 5 No ; No
Thrush 5 Unknown ; Unknown
LabCD4 7 250 ; >200
CD4Previous 7 250 ; >0
Bactrim CD4 Test 7 Yes ; Yes
CD4Previous 7 250 ; >200
AlertReport 6 62 ; 62
ReturnToMainFlow 2
StatusMalnutrition 14
StartSubFlow 15 StatusMalnutrition
Age 7 25 ; >13years
BodyMassIndexCalculate 6 20.7612456747405 ; BMI=Weight [kg] / ((height*height)/1000) [cm]
BodyMassIndex 7 20.7612456747405 ; >=18.5
StatusNutrition 11 0 ; 0
AlertReport 6 11 ; 11
ReturnToMainFlow 2
StatusLiver 14
StartSubFlow 15 StatusLiver
ULN ALT = 48 U/L 15 No Value
LabALT 7 Unknown ; Unknown
StatusLiver 11 Unknown ; Unknown
AlertReport 6 6 ; 6
ReturnToMainFlow 2
StatusActiveTB 14
StartSubFlow 15 StatusActiveTB
TBActiveTreatmentComplete 5 Unknown ; Unknown
TBActiveTreatmentCurrent 5 No ; No
Cough > 2 weeks 5 No ; No
Fever > 2 weeks 5 Yes ; Yes
AlertMedical 6 5 ; 5
LabTBSputum 7 Unknown ; Unknown
StatusActiveTB 7 Ordered ; Ordered
AlertOperational 6 5 ; 5
ReturnToMainFlow 2